

This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

#### Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

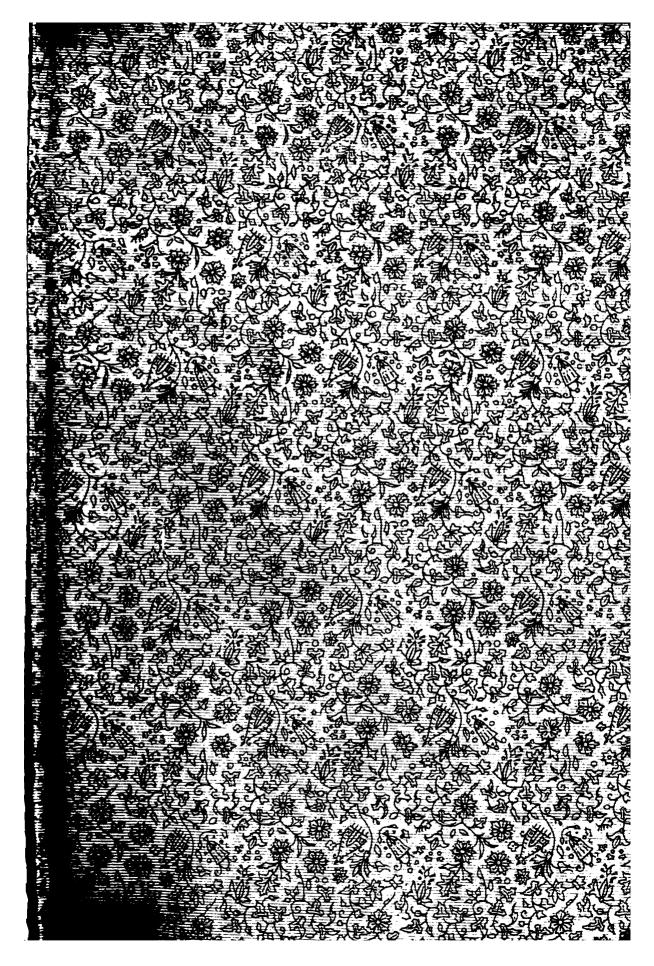
We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + Refrain from automated querying Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

#### **About Google Book Search**

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at http://books.google.com/

# BOSTON MEDICAL LIBRARY 8 THE FENWAY



. . • · .

### THERAPEUTIC GAZETI

#### A MONTHLY JOURNAL

OF.

#### General, Special, and Physiological Therapeutics.

#### EDITED BY

H. A. HARE, M.D.,

Professor of Therapeutics in the Jefferson Medical College.

WITH SPECIAL DEPARTMENTS UNDER THE CHARGE OF

G. E. DE SCHWEINITZ, M.D.,

Clinical Professor of Ophthalmology in the Jefferson Medical College. EDWARD MARTIN, M.I

Clinical Professor of Genito-Urinary Diseas versity of Pennsylvania.

WHOLE SERIES, VOL. XVII. THIRD SERIES, VOL. IX.

GEORGE S. DAVIS,
DETROIT, MICH., AND PHILADELPHIA, PA.
1893.

# BOSTON MEDICAL LIBRARY IN THE FRANCIS A. COUNTWAY. LIBRARY OF MEDICINE

Entered according to Act of Congress, in the year 1893, by GEORGE S. DAVIS,

In the Office of the Librarian of Congress, at Washington.



## Therapeutic Gazette.

Whole Series, Vol. XVII. DETROIT, MICH., PA., January 16, 1893.

Third Series, Vol. IX. No. 1.

#### CONTENTS.

#### Original Communications.

#### Leading Articles.

#### Reports on Therapeutic Progress.

	P	AGE
	Poisoning by Carbolic Acid The Treatment of Heat-Stroke	38 38
	The Treatment of Typhoid Fever by the Combined Use of Baths and Intestinal	•
	Antisepsis	40
	šipelas New Drugs	40
	Cupreine and its Derivatives	41
	The Employment of Sulphoricinic Acid	
	and the Sulphoricinates	41
	ride of Iron into the Uterus	42
	Agathine—A New Antineuralgic The Therapeutics of Diphtheria	43 43
	Two Cases of Diabetes Mellitus treated	
	with Jambul	44
	Cobra Venom	44
	Chloroform Administration	44
	The Antiseptic Intrauterine Injections	45
	after Labor	
	Case of Actinomycosis Forced Alimentation in the Treatment of	40
	Typhoid Fever	46
	Sulphate of Sodium and Intestinal Anti- sepsis in the Treatment of Acute Dys-	
	entery	47
	Pulmonary Emboli following Mercurial	
	Injections	47
	Dangers and Disadvantages of adminis-	**
	tering Chloroform in the Presence of a	48
	Naked Flame	50
	Europhen and Europhen-Aristol	50
	The Use of Saline Cathartics for diagnos-	
i	ticating Intestinal Obstruction	50
	Common Diseases of the Eye	52
	Extraction of Cataract without Iridectomy	51
	The Treatment of Symblepharon by a New Operation	53
	The Combined Iodides in the Treat-	33
	ment of Syphilis, especially of the	_
	Nares	53
ļ	of the Maxillary Sinus	53
	Aural and Nasal Study of Four Hundred	
	and Fifteen Deaf-Mute Children  Honey as a Topical Dressing for Par-	54
	Auricular Abscess	54
ı		

	P	AGE
1	Permanganate of Potassium in the Treat-	
1	ment of Gonorrhoeal Ophthalmia	54
Į	The Treatment of Herpes of the Cornea	•
	with Pyoktanin	55
ı	Scleritis, Iritis, and Diffuse Keratitis	55
ı	On the Use of Cocaine in Operations on	
!	the Eyes	55
ı	Cautery	
I	A Case of Thiersch's Skin-Grafting of the	55
i	Entire Cavity of the Orbit	56
-	Coal-Miners' Nystagmus and its Treat-	-
1	ment	56
I	Prompt Cure of Long-Standing Deafness	٠.
	by the Compressed-Air Bath	56
1	Sterilization of Solutions of Atropine, Eserine, and Cocaine, and a Descrip-	
١	tion of a New Pipette	. 56
١	The Treatment of Interstitial Keratitis	. 50
1	with Subconjunctival Injections of Cor-	
١	rosive Sublimate	57
١	Removal of a Calculus weighing Five	-
Į	Ounces	57
	The Treatment of Ulceration of the	_
	RectumIntubation versus Tracheotomy	58
	Intravenous Injection of "Normal" Salt	58
	Solution for the Grave Hemorrhages	
1	of Midwifery	40
ì	The Sterilization of Iodoform Emulsion	<b>59</b>
	The Conservative Treatment of Joint- Tuberculosis by a New Method	
ı	Tuberculosis by a New Method	60
1	The Modern Treatment of Tuberculosis	
1	of Joints	60
1		6z
١	The Value of Anastomosis by Means of	V
ı	Senn's Approximation Plates,	6x
	Cæsarean Section in Placenta Prævia,	62
1	Case of Supposed Heart-Failure during	
ı	the Administration of Chloroform	62
İ	Can a Septic Bullet infect a Gunshot	4.
	Wound ?	63
1		
1	Reviews	4-
١		63
١		
	Correspondence.	
1	London Letter	70
п		~

#### Original Communications.

DYSMENORRHŒA, WITH ITS CAUSES AND
TREATMENT—VULVO-VAGINAL
ABSCESS

CLINICAL LECTURE DELIVERED OCTOBER 18, 1892, AT THE JEFFERSON MEDICAL COLLEGE HOSPITAL.

BY E. E. MONTGOMERY, M.D.,

Professor of Clinical Gynzocology, Jefferson Medical College; Obstetrician to the Philadelphia Hospital; Gynzocologist to St. Joseph's Hospital.

ENTLEMEN:—I propose to-day to bring before you a series of cases illustrating disordered conditions of the structure of the uterus, particularly the cervix. These cases

illustrate more particularly the inflammatory conditions of this portion of the genital tract, and give rise to the symptom known as dysmenorrhœa. Disease of the uterus is indicated by the derangement of the performance of its functions. The first and most frequently performed function is that of menstruation, and the ease and comfort, or the pain and discomfort, the regularity or irregularity with which it occurs, the quantity-whether abundant or slight—are phenomena that lead us to determine the necessity of subjecting the patient to a physical examination, and giving her treatment to relieve the abnormal symptoms. Painful performance of the function may arise from a variety of conditions, so that we are not justified in assuming in an individual case that because she has dysmenorrhœa there is a particular condition present by which it is produced. In eliciting the history of the patient, we would ascertain whether the pain precedes the menstrual flow, begins with it, immediately follows it, or continues during the entire period. There are a variety of lesions which may give rise to this particular symptom. It may be due to obstruction. The uterine canal is stenosed, and, as a result of the obstruction, the patient goes into labor-like efforts to empty the uterus of its contents, and these contractions cause pains similar to those which take place during labor. Where obstruction is marked, blood accumulates in the uterus, forming a clot, and this is only expelled by severe contractions.

The obstruction may be due to a stenosis, to a flexion, or other displacement of the uterus. Thus, in flexion, the angle at which it takes place forms a constriction, the mucous surfaces lie in contact, and where marked, may with difficulty be overcome. is true the patient may have a cervical canal so small that it only presents a pin-hole orifice, or there are cases in which retroflexion or anteflexion exists, in whom there is not the slightest amount of pain during the menstrual periods; other cases in whom the cervix is so large that we can pass an instrument to the fundus, and yet the patient suffers severe pain at each menstrual period. In such cases we must consider some other reason than the obstruction as an explanation of the pain. It is better explained under what is known as the congestive theory, i.e., in these patients the chronic inflammation of the uterine mucous membrane leads to its thickening at each menstrual period, and a contraction of the middle layer of muscular fibres of the uterus, resulting from the erection of the organ, causes diminished calibre of the uterine cavity, so that it is no longer sufficiently large to afford room for the accommodation of the swollen mucous membrane, and the pressure of the surfaces upon each other gives rise to distressing pain until the flow is fully established. These patients suffer pain from the beginning, or just preceding the flow, and after it becomes established the pain ceases,-in other words, with the establishment of the flow the engorged mucous membrane is relieved and the patient no longer suffers.

The first patient I bring before you is a woman, twenty-seven years of age; father died of pneumonia; mother healthy; menstruated at thirteen; was always regular until marriage, at twenty-three; never been pregnant. While

we have in this patient no history of an interference of the function of menstruation, the other function of the uterus-that of childbearing—is disturbed; she has been sterile. Soon after marriage her abdomen became enlarged, and four months later she supposed herself pregnant. She had a menstrual flow, which occurred at what would have been her period, which lasted two weeks. Since this she has suffered very greatly from pain in the Menstruation became painful, pain has occurred four or five times a day. Her work keeps her on her feet all day. She has suffered from this pain during the entire four years; suffers also from constipation of the bowels, with more or less indication of hemorrhoids. Two months ago she developed symptoms of chorea, which began with spasmodic contraction of the face and neck. She feels the same spasms in the muscles of the uterus. The attack of chorea obliged her to come under observation and seek treatment. chorea, as you notice, is quite marked, leading her to bend the body in different positions. Now, the history of painful menstruation, more or less distress or discomfort in the pelvis, of sterility, has led us to consider the advisability of treating the local disorder with the hope that by so doing we may relieve her nervous condition.

As we examine this patient we find the uterus acutely anteflexed. The fundus is thrown forward upon the cervix, which of itself would probably lead to painful menstruation. history shows that the pain and discomfort in menstruation has occurred since marriage; that she was free of it before. It is quite possible, and I believe very probable, from the peculiar symptoms present in this patient, that the flexion existed before marriage, but that it was not at that time associated with inflammatory conditions, that the inflammation has developed since marriage and produced the painful menses. Since marriage pain has become great, simply as a result of addition of inflammation. It becomes a question in such a case, "How shall we treat the patient?" It is recommended in many of these cases that the patient be subjected to dilatation of the uterus, thorough curetting, packing the cavity with iodoform gauze, or the introduction of a drainage-tube. The one difficulty, however, is that the flexion still remains after the treatment has been in use, and very soon the inflammatory symptoms redevelop. For this reason we propose, in this patient, to first dilate the cervix, curette the cavity, and then split up the posterior lip to the junction of the vagina, and in so doing straighten the canal and make the external os at the junction of the vagina with the cervix. In this way the canal is rendered less tortuous, the menstrual flow escapes with less discomfort. and the probabilities of the patient becoming pregnant are increased. In performing the operation, we exercise the same care in cleansing the parts, our hands, and our instruments, as we would do if we were about to undertake an abdominal section. The vagina is thoroughly cleansed with soap and water, which should be impregnated with two per cent. of creolin. In washing the vagina, you take a piece of gauze, or better, some antiseptic wool, having the fluid poured in from a pitcher, the cavity is thoroughly scrubbed. In so doing, we remove the mucus, exfoliated epithelial cells. and material which would be retained in the crevices of the vagina and would escape removal and sterilization by the ordinary vaginal irrigation. Following this application, the vagina is irrigated with sterilized hot water. Of course, as a preliminary step, the pubes and external genital surfaces have been thoroughly shaved. Dilating the uterus, we introduce an Edebohl's speculum, the patient lying upon her back; grasp the cervix with a volsellum, hold it firmly, then introduce graduated bougies one after the other, until the uterus is dilated to sufficient size, usually from a 36 to 43 French scale. Smaller bougies are introduced with the greatest care, for, by careless handling in a canal such as this, the instrument may be shoved directly through the fundus of the uterus into the abdominal cavity. This has occurred to me twice. Once I simply packed the uterus with iodoform gauze, feeling sure that it would establish free drainage. the other, as it had been intended to shorten the round ligaments, an abdominal incision was done instead, when the ovaries were found markedly cystic; one was removed, and a cyst removed from the other, and the incision sutured. The puncture in the uterus was readily recognized and its peritoneal surfaces sutured over it. Both patients recovered without untoward symptoms. These cases illustrate the fact that the mere puncture of the uterine walls by the bougie is not necessarily dangerous, although it is not a procedure we would desire to have occur. On account of the tendency, however, of smaller instruments to puncture the uterine walls, I am in the habit of using as large an instrument to begin with as the cervix will permit to pass, as there is much less danger of injuring the walls in the use of the larger instruments than the smaller. Where the cervix is very tight, it will be preferable to use the parallel-bar dilator to accomplish the first dilatation, following it by bougies. Having accomplished the dilatation, we proceed to the use of the curette. For this purpose the sharp, fenestrated instrument is preferable, going over the entire mucous surface, scraping away the hypertrophied tissue.

In this patient, having completed the dilatation and washed out the cavity of the uterus, we irrigate with a sublimate solution or peroxide of hydrogen. We proceed to operate on the posterior lip. This is done by introducing the probe-pointed blade of a Kuchenmeister scissors into the cavity of the uterus and cutting through the posterior lip. This brings it up to the junction of the cervix with the vagina; then, with a knife, I still further enlarge the opening over the cervical canal. 1 To prevent this from contracting, we now pack the cavity of the uterus with iodoform gauze, which will be left in place for nearly a week. The ordinary scissors in performing this operation would simply slip off and not cut through the tissue. The scissors I show you have one blade probe-pointed, while the other has a sharp hook upon it, which is driven into the structure of the uterus and holds it until it can be cut through. The cavity of the uterus is then packed with iodoform gauze carried up to the fundus of the organ. This is packed well into the opening below, so as to keep the fresh surfaces separated. The lower part of the vagina is also packed, and a pad placed over the vulva. The latter will be removed to permit the patient to evacuate the urine, or the introduction of the catheter. The intravaginal and intrauterine gauze is removed at the end of from five to seven days. Then the vagina has been thoroughly cleaned, this remains sweet the entire time. It promotes a very free watery discharge from the uterus, and it is astonishing the amount of drainage that takes place under such circumstances. Many cases may thus be treated and relieved who would otherwise be subjected to abdominal operations for the removal of organs which could not be subsequently replaced.

The next patient is a woman, thirty years of age; married four years; no children; complains of excessive pain during sexual intercourse. The mere attempt causes violent spasms of the vagina, frequently rendering such an aggravation that she dreads the mere thought of it. It has been a source of trouble between her husband and herself. She underwent treatment for this two years ago by electricity, and obtained very slight relief. Of late the disease has returned in an aggravated form. Elec-

tricity was given between September and October, 1890, in the form of galvanism, using as high as 30 milliampères; but it gradually recurred, and she is now more sensitive to touch than before. Her menses occur at regular in-While she always suffered some pain, during the last four years it has gradually increased with each succeeding period, until now the flow is attended throughout the period with pain of an agonizing character. She has been married four years; never been pregnant. In this patient we have what is generally denominated as vaginismus. While this is spoken of as a disease, yet it usually is associated with some lesions, either in the region of the vulva or of the surrounding parts. In every such case we should carefully examine the surfaces of the vagina and vulva to ascertain whether there is no local source or cause for the irritation. We find here an irritation of the vulva. which is fissured posteriorly, producing a condition similar to that of fissure of the anus. In these cases, mere touch or the slightest dilatation gives rise to agonizing pain, due to the fact that the nerves are exposed in these fissures. It should not be forgotten, however, that fissure of the anus may cause vaginismus, and, where no local symptoms are present, the anus should be carefully examined. This fissured condition of the vulva and vagina not unfrequently arises as a result of disease of the uterus itself. Inflammatory conditions of the uterus give rise to irritating discharge, producing vulvitis, and keep up irritation in that region. So, then, we examine the orifice of the vagina, the condition of the anus, and determine the position, size, and relation of the uterus and the condition of its mucous membrane. In this patient we have, in addition to the symptom of external irritation, history of pain during menstruation and sterility, which would lead us to suspect a diseased condition of the uterus. We have to separate the vulva to see if we can find any local irritation which has already been induced. Examining the anus, we find a crack or fissure upon its posterior surface, which has, without question, aggravated the condition. The uterus is not displaced, but presents a slight flexion low in the cervix. The mucous membrane is slightly abraded. We will proceed to dilate the cervix. You notice in the use of these bougies there is very little bleeding. Thorough dilatation, with curetting, and packing with iodoform gauze, is done. As in the former patient, after-treatment consists in keeping the patient in bed, having the bowels moved early, changing the external pad frequently, and at the end of five or six days removing the gauze from the vagina and uterus. Subsequently the patient will be given vaginal douches twice a day, with 1 to 2000 acid sublimate. In the first case, where we split up the cervix, we will probably pack it again with gauze after the removal of the first packing.

The next patient is twenty-six years of age; healthy as a child, from fourteen to sixteen very delicate; menstruated at nineteen first time; always been irregular, varying from two to five weeks, lasting from two to eight days. The flow has always been painful, and for a day before its establishment would have acute pains from the waist down, more marked on the left side and in the left leg. Married at twenty-one; has never been pregnant; was treated seven years ago for an attack of peritonitis. We are, of course, unable to determine the cause of this attack. In this patient we have another of the series of cases in which deranged menstruation is associated with sterility. Consequently we will impress upon you particularly the association of these two conditions,-dysmenorrhæa and sterility. Where a woman suffers from painful menstruation, she is much less likely to become pregnant. In other words, there is an inflammatory condition, in a great many cases, which increases on the occurrence of marriage, and where one of the unpleasant symptoms is relieved, the other is usually as well. It should be remembered that dysmenorrhœa, however, is not always the result of congestion or obstruction. It may be caused by inflammation of such a character that the changed mucous membrane is thrown off in casts or shreds during the process of the period, giving rise to what is known as membranous dysmenorrhœa. Then, again, we have patients complaining of pain occurring from ten days to two weeks prior to the menstrual flow, pain which is relieved as soon as the flow becomes established. These are cases of what is known as ovarian dysmenorrhœa, where the inflamed tunica of the ovary causes intense pain as soon as the congestion begins to take place which indicates the maturing of a Graafian follicle.

Another cause of pain is diseased condition of the tubes. These, however, give rise to pain following the menstrual flow. After the flow ceases, patients will complain of pains in either inguinal region, lasting sometimes for nearly a week. This is irregular, intermittent in character, and is without question due to the peristaltic action of the tubes in their effort to discharge fluid into the uterus. In some cases we may have slight pelvic peritonitis, resulting from the possible escape of

fluid from the tubes into the cavity of the peritoneum. In others the uterus will be found plugged with thick, viscid mucus, the cervical canal comparatively open. It will be asked in such cases why you would subject the patient to further dilatation when it is evident the discharge can take place? It will be found, the mucous membrane is more or less vascular. bleeds from the slightest touch. The object of dilatation is to afford opportunity for curetting, so that this diseased tissue can be scraped away and a new mucous membrane formed of a better character. In these cases of inflammation, the mucous membrane of the uterus is partially abraded, loses its ciliated epithelium, drainage is defective, and the canal must be curetted and drained just as much as any other would be. As the tendency, in such cases, is to extension of the inflammation to the tube, it is important that the patient should be treated before the inflammation passes beyond the uterine mucous membrane. The plan of treatment I have suggested in these patients is one which meets every indication. The researches of the bacteriologists have demonstrated that the cavity of the uterus contains large colonies of bacteria, which, under favorable circumstances, are capable of multiplying and producing ptomaines, the absorption of which will lead to very serious results, if not to the death of the patient. The dilatation and curetting of the uterus under proper precautions, with subsequent packing with gauze, is productive of the very best results. Gauze drains the uterus by its capillary action, by its presence as a foreign body stimulates the contraction, the circulation is increased, the absorption and taking up of inflammatory products promoted, and a uterus that is quite large will thus be melted down and decrease in size. It requires, however, the most exact and careful precaution in preparation and performance. As you have noticed, I have recommended the use of two per cent. of creolin in a soap solution for washing, and that the vulva, vagina, and cervix should be thoroughly scrubbed with this. The creolin is preferred to the bichloride for the reason that it leaves the mucous surfaces oily, while the latter cauterizes the surface and to a certain extent contracts it, leaving it more uncomfortable in the subsequent convalescence.

Vulvo-Vaginal Abscess. — The next patient I bring, before you is a woman suffering from enlargement in one of the labia. This is situated in its posterior surface, causing a projection of that labium. As its surfaces are separated, we find it projects on the mucous surface, is quite red, inflamed, and painful to

the touch. It is evidently a case in which there has been involvement of the vulvo-vaginal gland from specific contagion, that the duct has become occluded, that the gland infected has given rise to accumulation in its cavity and the formation of pus. The proper plan of procedure in such a case will be the incision of the gland, emptying out its contents, washing out the cavity with peroxide of hydrogen, and packing the opening with iodoform gauze, thus promoting the destruction of the gland.

#### ABSCESS AROUND THE RECTUM.

A LECTURE AT THE CLINIC FOR DISRASES OF THE RECTUM, AT THE NEW YORK POST-GRADUATE HOSPITAL.

BY CHARLES B. KELSEY, M.D.

CENTLEMEN:—I am glad to be able to I show you to-day a case of great practical interest to you all, and one of a kind which you must all be ready to treat at a moment's warning, and often without any opportunity for consultation. The hemorrhoids and the fistulæ you may temporize with; the excisions and colotomies you may send to somebody else; but when called to one of these you must act at once or get somebody else to act for you.

The patient under ether is, as you see, a strong young laborer, in excellent physical condition; on the left buttock and perineum you observe a brawny swelling, which it requires no skill to say contains pus. In fact, after the perineal region has been cleansed and made aseptic, you see me plunge a long, straight bistoury well up into the ischio-rectal fossa and evacuate pus through the puncture thus made. You all notice the foul character and fæcal odor of the same. This does not prove that the abscess communicates with the gut, for pus near the rectum will often have this foul fæcal odor from proximity, without actual perforation.

This, then, is our case,—a simple abscess in the left ischio-rectal fossa, into which I have put a bistoury, and from which the pus is steadily escaping in a small stream through an incision just as long as is the breadth of the knife-blade that made it. But let nobody imagine this case has been operated upon, for we have not begun to operate. I have let out a little pus to show you that pus was there and to teach a lesson; that is all. We will operate later.

The case just as it is now before you reminds me so forcibly of one that I operated upon only yesterday in private practice that I must compare the two to impress the lesson I wish to convey upon you. A young woman on her wedding-journey begins to suffer acutely from pain in the region of the rectum. She bears it as long as she can,-about three days,-and then consults a doctor, who fails to make a diagnosis. After a week of suffering she reaches home, is examined by the family physician, and an abscess the size of a small egg is discovered in the ischio-rectal fossa. Exactly such an incision is made as you have seen me make here, but in that case not for diagnosis, but to cure. Four weeks later I was asked to see the case. The suffering had not been relieved, the patient had been confined to her room and the lounge, and for the last week the pain had been almost unbearable, particularly when the bowels were moved. On examination the puncture made on the right side of the rectum was still discharging freely, and on the opposite side there was just such a painful brawny swelling as you see here. The finger in the bowel showed also that this new abscess was bulging into the lumen of the gut. I say new abscess, but it was not new. It was the same one which had been punctured a month before on the opposite side, and had gone steadily on destroying the parts ever since.

The treatment was radical. First, the old puncture was enlarged till my finger could enter. Next, the newer collection of pus in the other ischio-rectal fossa was incised and the finger of the other hand passed into it. The two fingers came together in the median line between the vagina and rectum, and when the incision was finished it reached from a point well below and to the right of the bowel, straight around over the perineum to a corresponding point in the left fossa. Nor was this all, for on the left side the pus was just about to open into the gut; no tissue was left except unsupported mucous membrane, and a director was forced through this and both sphincters cut. The gentleman asks, "What became of the perineum?" There was no perineum except the skin. What had once been the perineum was part of an abscess cavity. If you ask what will be the effect of the disease and the transversal incision across the perineum for its cure, it will be weeks before I can tell you. Of course the common insertion of the sphincter vaginæ, sphincter ani, and transversus perinæi was cut. I do not think there will be incontinence of fæces, but what will be the final effect upon the vagina and internal organs of this loss of support time alone can tell.

After the incision all septa of broken-down tissue were removed, and the entire abscess

cavity being brought to the light, it was dressed with bichloride gauze.

We will do the same to this man, and let him be taken away. I pass a blunt-pointed bistoury into the puncture already made, and enlarge it upward and downward for fully two inches. With my finger I find that this one also has started for the opposite fossa, and also in front across the perineum, instead of behind the anus, and I follow the pus with a transverse incision, but only just up to the median line, which is as far as the pus has had time to burrow.

Now comes the point at which you must use your judgment and when experience is of great value. In the other case I told you that after doing what I have just done here I found the pus separated from the rectum only by mucous membrane, and that it was necessary to divide both sphincters. Here the sphincters will not be divided. The other case, when it was first punctured, was exactly like this, and the same sort of treatment would have cured it. But when I saw it it was practically a horseshoe fistula,-an abscess surrounding the rectum in the form of a horseshoe, with the points turned downward, and with an external opening made by the physician on one side of the gut, and an internal opening made by the disease on the other. I must try and make this very plain to you, because the whole treatment depends upon it. I say that in the young lady's case there was an internal opening, and yet in describing the operation I said the abscess cavity was separated from the gut by mucous membrane, which I tore through with a director, and then cut the sphincters, laying the abscess cavity open into the bowel. The latter was the exact condition, and yet, as in spite of laying open the abscess so freely, this thin partition of mucous membrane was sure to break down later and form a fistula, I treated the case as one of fistula already formed. Had this not been done, the patient would in the future have required a second operation for fistula.

In this case, because we have operated earlier, there is still a good deal of healthy tissue between the abscess and the rectum,—about half an inch. There is no fistula, and there will be none. There is, therefore, no indication for interfering with the sphincters or the rectum.

The rule may be stated in a more general way. When you cut into an abscess around the rectum, and find that one wall of the abscess cavity is made up in part of the rectum itself,—in other words, that the pus is working towards the cavity of the bowel, and has already begun to press upon it,—you may be cer-

tain that perforation of the gut will occur in spite of free skin incisions, that a fistula will thus be formed, and render necessary at some time the usual division of the sphincters. It is, therefore, better to complete the destruction which the abscess has so nearly accomplished, open the latter into the bowel, and do the usual operation for fistula in addition to opening up the abscess cavity.

When, on the other hand, as in this case, you find that you have seen and operated upon the abscess in time, and that the pus has not yet reached the gut, but that there is still sufficient tissue on the rectal side for healing to occur without perforation, you will treat the abscess exactly as though it were in any other part of the body. It is not a fistula,—you have operated early enough to prevent its ever being a fistula,—therefore it has no more relation to the rectum than it has to the urethra, and it would be as sensible to open it into the one as into the other.

Some experience will be necessary to enable you to decide this point in the treatment. Half an inch of tissue between the two cavities is a good practical rule.

And now comes the main point in this whole lecture. It is, in these cases, to always operate without delay. They are not like abscesses elsewhere, where you can wait till the pus finds its own escape. I never in my own practice allow a night to intervene between the diagnosis and the incision in one of these cases, for a few hours may make all the difference between an abscess and a fistula; between continence and incontinence of fæces for life; between a couple of weeks' and many months' confinement. Nor do I wait for pus to form in these cases. They almost never undergo resolution, and it is useless to poultice and waste time. When you see a hard, inflammatory swelling in the perineum or buttock, cut into it at once, and cut deeply and freely. The pus will follow in a day or two, if it is not already formed. In this way only will you prevent great destruction of the soft parts, and perhaps irreparable injury to rectum or bladder. I have shown you how the incision should be made so that no pockets are Lay the entire cavity open, break down all partitions and sloughing tissue, irrigate with bichloride, and dress with bichloride or iodoform gauze.

The after-dressing is simple but important. The gauze put in at the time of the operation should be left till it has become softened by discharge and can be removed without pain, say on the second or third day. Often this is the only dressing that need be used during the

case, the after-treatment consisting simply in passing the finger along the wound every second or third day to make sure it is healing from the bottom, and not falling together and uniting at the sides, leaving a cavity behind. If there should be any indication for dressings, use them. If the granulations are feeble, stimulate them; if exuberant, cauterize them; but don't stuff the wound with gauze merely because there is a wound. It is a wound that nature will often take care of much better than we can, if we keep it clean with simple water and let it alone.

The complications to be met with in these cases are many. I saw one not long since where the diagnosis was only to be made by rectal examination, there being no hardness or redness of the skin. The pus was away up at the apex of the ischio-rectal fossa, and was pressing upon the rectum at that level, and had also closed the urethra, so that the man's symptoms were very misleading. His physician had made a diagnosis of "inflammation of the rectum" because of the pain in the rectum, but there was no pain around the anus or perineum. The man was also suffering from a distended bladder, with overflow. On examination a hard, inflammatory mass the size of a large orange was found projecting into the gut from the left side, about three inches above the anus.

The important question in such a case is where to evacuate the pus, through the rectum or on the buttock; and here, as in the case you have seen, the decision rested upon the amount of tissue intervening between the abscess cavity and the rectum. Had there been only the rectal wall, I should have incised it, let the pus escape freely by the anus, irrigated and drained the cavity, and left the case to nature, merely keeping the incision into the gut open by the occasional introduction of the finger. The abscess might in this way have healed kindly, or pus might have eventually worked its way to the skin, forming a complete fistula. But judging, from the impression made upon the finger, that there was still a considerable barrier between the abscess and the gut, I determined to open it from the buttock. A long bistoury was therefore passed parallel with the bowel straight up for three inches, till pus appeared by the side of the blade. The incision was then enlarged till it admitted two fingers into the abscess cavity, which was broken up and cleaned out in the usual way. The subsequent treatment consisted only in keeping this incision open by the daily passage of the finger through it up to the abscess. The latter closed up promptly before the deep incision was permitted to close at all, and the patient made a good recovery, without impairment of the function of the parts.

In this way only can the formation of extensive fistulæ, the cure of which may necessitate deep incisions, and future incontinence be avoided. Many patients have been rendered unhappy for life by the mistake of some practitioner in thinking that an abscess around the rectum was the same as an abscess anywhere else, and could either be left to discharge itself, or would do well if the pus were evacuated by a small incision.

THE RELATIVE VALUE OF THE SEVERAL SUBSTANCES RECOMMENDED AS ANTIDOTES TO PHOSPHORUS.

Contribution from the Laboratory of Therapeutics of the Jefferson Medical College.

By E. Q. THORNTON, M.D., Demonstrator of Therapeutics.

ON account of the diversity of opinion as to the best antidote in cases of acute phosphorus-poisoning, and believing the subject needed more study, I was led to make the following experiments with the several substances recommended as antidotes to this violent poison.

The antidotes recommended in many textbooks are old French oil of turpentine or sulphate of copper. Antal, of Budapest, has recently experimented with and highly recommended permanganate of potassium. Solution of hydrogen peroxide has been suggested.

Before referring to the experiments upon animals, I wish to refer to the reaction supposed to take place in the test-tube when any of the several named substances are brought in contact with phosphorus.

Old French oil of turpentine, which is acid in reaction, is said to form with phosphorus a crystalline, spermaceti-like mass, which has been called "turpentine phosphoric acid." The ordinary oil of turpentine does not bring about this change, and inasmuch as the old French oil of turpentine cannot be obtained in this market, it should cease to be considered as a practical antidote.

When a solution of sulphate of copper is poured over phosphorus, the latter becomes at *once* coated with a black deposit of copper, while phosphoric and sulphuric acid are found in the solution. The same reaction occurs *instantly* upon mixing solutions of the two substances, one grain of phosphorus reducing

about four and a half grains of sulphate of copper.

Solutions of phosphorus and permanganate of potassium, when shaken together, precipitate a black oxide of manganese, phosphoric acid and phosphates being found in solution. A few drops of dilute hydrochloric acid hastens this change, chloride of manganese being formed.

The mixing of solutions of phosphorus and hydrogen peroxide results in the formation of phosphoric acid in the solution. This change takes place very slowly, but may be made to take place more rapidly by gently heating.

In the following experiments pure phosphorus dissolved in oil was administered by introducing into the stomach a catheter to which is attached a rubber tube and small funnel, and through this pouring the solution of phosphorus. The antidotes were dissolved in water and administered in the same way.

Experiment 9 .- Bitch, full grown; weight, 5 kilos. At 10.30, 2 grains of phosphorus were given, followed immediately by 4 ounces of Marchand's solution of hydrogen peroxide. Severe vomiting and purging followed, unchanged phosphorus being vomited and also passed by bowels. The animal gave evidences of much pain and exhaustion; 1/2 grain of sulphate of morphine was given hypodermically to relieve pain. At six o'clock in the afternoon the animal was relaxed and stupid, perhaps from exhaustion and effect of morphine. Much to my surprise, I found the animal alive the following morning. Took food on the third day, and at present, three weeks after experiment, is apparently well.

Three control experiments were made. Two dogs, each given 2 grains of phosphorus, died on the first and third day. One dog, receiving 1 grain of phosphorus, recovered.

The conclusions arrived at from these experiments are as follows:

Permanganate of potassium is the best antidote for phosphorus. It must be used before the poison has become absorbed and must be well diluted (.5- to 1-per-cent. solution), or vomiting will result before the chemical reaction has taken place in the stomach. It must be given in excess, as considerable permanganate is reduced by the organic substances in the stomach.

While sulphate of copper and phosphorus are chemically incompatible, and reaction occurs instantly when they are brought in contact, it decidedly complicates a case of phosphorus-poisoning by causing severe gastro-enteritis. Any substance intended to act as a chemical antidote in the stomach must be given in ex-

#### Experiment 1.—Dog, full grown; weight, 6 kilos.

Time.	Poison.	Antidote.	Remarks.		
12.05 12.20 12.23	I grain phosphorus.	Io grains sulphate of copper.	Freely vomiting oil, black copper precipitate, unchanged sulphate of copper, unchanged phosphorus. After having emptied stomach by vomiting, the animal continued to make <i>violent</i> attempts at vomiting, bringing up only small quantities of thick, frothy mucus.  Large, watery movement from bowels, containing		
			black copper precipitate, epithelium, and blood. Attempt at vomiting, and severe straining at stools, with the result of bringing from the bowels only a small quantity of blood-streaked mucus; continued until 1.15; animal much exhausted. During afternoon there were several small black passages from bowels. Dog refused food or trink, and died the following afternoon.		

#### Experiment 2.—Male pup; weight, 5½ kilos.

Time.	Poison.	Antidote.	Remarks.		
10.48 11.16 11.18	1 grain phosphorus.	5 grains sulphate of copper.	Freely vomiting oil, black copper precipitate, unchanged sulphate of copper, unchanged phosphorus. Violent attempts at vomiting, bringing up only small quantity of thick, frothy mucus.		
11.26	,		Free, watery stool, changed copper, bloody mucus, epithelium bile. Continuous attempts at vomiting and purging, a small quantity of blood-streaked mucus being expelled from bowels by great effort.		
12,00			Vomiting and purging ceased; dog much exhausted; three black movements from bowels during afternoon; animal refused food or drink, and died two days later.		

#### Experiment 3.—Bitch, full grown; weight, 53/4 kilos.

Time. Poison. Antidote. Remarks.	
11.00 11.37 11.40 12.10  12.30  13.42 grains phosphorus. 5 grains sulphate of copper. Same violent vomiting as Experiments 1 and Same characteristic black, watery, bloodstools and violent tenesmus as Experiments Animal ceased vomiting and purging; m hausted; two black passages from bowel afternoon; animal refused food or drink, a fourth day.	streaked I and 2. nuch ex- s during

#### Experiment 4.—Dog, full grown; weight, 6 kilos.

Time.	Poison.	Antidote,	Remarks.
11.45 11.50	No phosphorus in this experiment.	10 grains sulphate of copper.	Vomiting freely sulphate of copper, mucus, followed by violent attempts at vomiting, bringing up only frothy mucus.  Free greenish, watery passage, unchanged sulphate of copper, bloody mucus, epithelium, followed by violent attempts at vomiting and tenesmus, only a little blood-streaked mucus being passed. Dog much exhausted; refused food and drink same day; following day took water, but refused food until third day. Recovery apparently complete at end of two weeks.

Experiment 5.—Bitch, full grown; weight, 61/2 kilos.

Time.	Poison,	Antidote.	Remarks.
12.45 1.20 1.30	2 grains phosphorus.	16 grains permanganate of potassium in 1 ounce of	Vomited phosphorus and oil.
1.31 1.34		water.	Vomited freely.  Free movements from bowels, changed permanganate, phosphorus, and epithelium. Dog much exhausted, and died at 5.30.

#### Experiment 6.—Dog, full grown; weight, 5 kilos.

Time.	Poison,	Antidote.	Remarks.
11.20	I grain phosphorus.	8 grains permanganate of potassium dissolved in 2 ounces of water.	
12.00 12.45		· · · · · · · · · · · · · · · · · · ·	Vomited changed and unchanged permanganate. Black, watery movement from bowels. Dog was not exhausted; took food and drink following day, and recovered.

#### Experiment 7.—Dog, full grown; weight, 6 kilos.

Time.	Poison.	Antidote.	Remarks.
12.52	2 grains phosphorus.	16 grains permanganate of potassium in 4 ounces of water.	Permanganate dissolved in 4 ounces of water.
1.30 3.30			Vomited changed and unchanged permanganate. Black, watery stool. Dog not exhausted; took food and drink following day, and recovered.

#### Experiment 8.—Dog, full grown; weight, 5 kilos.

Time.	Poison.	Antidote.	Remarks.		
10,30	2 grains phosphorus.				
11.00		16 grains permanganate of potassium dissolved in 4 ounces of water.	Permanganate dissolved in 4 ounces of water.		
11.20			Vomiting changed and unchanged permanganate.		
12.10			Black, watery movement from bowels. Dog not exhausted; several black, watery stools during afternoon; recovery.		

cess, so that it may come in contact with all the poisonous material; but with sulphate of copper, whether given in excess or in the same chemical proportions required to make the change, violent gastro-intestinal inflammation results.

In all cases of phosphorus-poisoning, in which sulphate of copper was used as an antidote, death resulted. Although the animal to which sulphate of copper alone was given recovered, decided gastro-enteritis resulted. I am of the opinion that it should cease to be recommended.

The animal to which the solution of hydrogen peroxide was administered recovered after poisoning by phosphorus. Unchanged phosphorus was vomited and passed by the bowels by this animal, and severe gastro-enteritis and exhaustion resulted. Peroxide of hydrogen is too slow in oxidizing the phosphorus, and too irritating upon the digestive tract to be a valuable antidote.

Inasmuch as old French oil of turpentine cannot be obtained, it should cease to be considered as a practical antidote.

DETACHMENT OF THE RETINA AND ITS TREATMENT, WITH FOUR ILLUS-TRATIVE CASES.

A WARD LECTURE IN THE PHILADELPHIA HOSPITAL,

By G. E. DE SCHWEINITZ, M.D., Clinical Professor of Ophthalmology in the Jefferson Medical College; Ophthalmic Surgeon to the Philadelphia Hospital.

DETACHMENT of the retina, by which is understood, in the widest acceptation of the term, a separation of this membrane from its organic connections with the underlying choroid, is an ocular lesion, destined in many cases to destroy, or, at all events, to vitiate materially the functions of the affected eye.

The relative frequency of this affection may be gathered from the statistics published by Galezowski.\* This observer analyzed 152,000 cases of ocular disease with reference to this point, and found 784 detachments, or .52 per cent. of the whole number.

The serious nature of the disease is evident by a reference to the statistics of the causes of blindness. Thus, in the table of blindness, from idiopathic diseases of the eye, given by Magnus, and confined to patients under twenty years of age, we find among 1060 cases 27, or .84 per cent., accredited to sublatio retinæ. Again, in 2528 cases of blindness of both eyes, among adults and children, observed by Schmidt-Rimpler, Stolte, Uhthoff, Hirschberg, Landesberg, Bremer, Seidelmann, Katz, and Magnus, † 1696 had lost their vision from idiopathic ocular diseases, of which retinal detachment constituted 120, or 4.726 per cent. It is unnecessary, however, to confine ourselves to the European clinics for information on this point. Drs. H. F. Hansell and J. H. Bell ! have published an excellent statistical review of the proportion and cause of blindness in 32,000 eyes consecutively treated in the Jefferson College Hospital, under the care of Dr. William Thomson; and in examining the specific causes of lost vision, irrespective of age, sex, or other relation, in the order of their frequency, have found the percentage of detachment of the retina to the whole number of blind eyes to be 2.21.

The causes of retinal detachment reside in various morbid conditions of the eye or surrounding orbital tissues, so-called idiopathic separation being due to an accumulation of serous fluid between the retina and the choroid, although the affection may also be occasioned

by an effusion of blood in the same situation, or by the presence of a solid growth arising from the choroid, or a cystic body lying beneath the retina. The main causes may be summarized as follows: Advanced (malignant) myopia; traumatisms; effusion of blood, preceded usually by hemorrhages into the vitreous or retina; intraocular tumors; tumors and abscesses in the orbit; diseased conditions of the eve, as retinitis, cyclitis, irido-cyclitis, chronic choroiditis, hyalitis, etc.; and, finally, cases ofdetachment occur suddenly, in which none of the affections which have been named are present. In old people, warm baths and colds are mentioned as possible exciting causes by Schmidt-Rimpler and Becker. In the collection of cases by Galezowski, § among 784 detachments, there were 532 men and 252 women, both eyes being affected 57 times. The causes in his cases of retinal detachment are thus enumerated: 646, myopia; 194, trauma; 13, after operations; 12, syphilis; 4, sympathetic inflammations; and 10, tumors. Nordensen's researches (to which I shall have occasion to refer again) agree with the statistics just quoted, that more men than women are affected, and that myopic refraction most frequently is present, the separation being more apt to occur in an eye in which the visual disturbance has rapidly developed. Hence one of the complications always to be dreaded in advanced myopia is detachment of the retina. Traumatism, you see, accounts for many cases; for example, the blunt force applied to the globe by the impact of a flying cork from a bottle, a piece of wood, or a raquette-ball. The immediate result of a perforating wound of the sclera, on account of extensive loss of vitreous, may be retinal detachment, or this may occur later, as the result of cicatricial contraction when the retina has become adherent to the cicatrix. An ordinary rupture of the choroid, as has been pointed out by Knapp, may in time be followed by detachment of the retina. Those retinal separations which result from operation are in one sense properly classed with traumatisms, the accident being most often seen some time after cataract extraction, especially when the wound has had a peripheral situation, and has healed with a bulging (cystoid) cica-In irido-cyclitis and irido-choroiditis, the shrinking of organized exudates in the vitreous drags the retina from the choroid, and in many blind and atrophied eyeballs, after removal, a funnel-shaped detachment of

This is well illustrated in

the retina is found.

<sup>\*</sup> Recueil d' Ophthalmologie, 1888, p. 151.

<sup>†</sup> Quoted by Noyes, "Diseases of the Eye," p. 700.

<sup>‡</sup> Archives of Ophthalmology, vol. xxi. p. 51.

this drawing taken from Wedl and Bock's atlas, and also in the specimens which I exhibit.

A number of theories have been propounded to explain the *mechanism* of detachment of the retina, and although its pathology is not definitely settled, it may be stated that all cases of idiopathic separation are preceded by a change in the pressure exerted by the vitreous upon the retina (whereby this membrane is kept in place against the choroid), and it is highly probable that this change consists in detachment and shrinking of the vitreous.

It would be interesting to trace the different views which have been held in regard to the pathology of detachment of the retina, but as time scarcely permits an extended review of this character, I will refer briefly to the resume given by Schoeler. Before the time of Heinrich Müller much weight was attached to what is known as the "secretion theory,"—namely, that the phenomena of separation of the retina depended in some way upon an anomalous secretion of fluid. In 1856, however, Müller taught that filamentous or membranous opacities in the vitreous, by contracting, might detach the vitreous body alone, or being attached to the retina, this might follow the shrinkage, and thus cause separation of this membrane from the choroid. In 1867 Iwanoff, on the basis of anatomico-pathological investigations, demonstrated that disease of the vitreous body tended to produce detachment of the vitreous, and that the latter condition was a forerunner to retinal detachment. In 1870 De Wecker suggested that the fluid found in the subvitrinal space after detachment of the vitreous succeeded in passing behind the retina through a rupture which took place in this membrane. Working upon these lines, Leber, in 1882, and Nordensen, in 1887, have developed the most satisfactory explanation which is given of retinal The first process is a fibrillar detachment. change in the vitreous which leads through shrinking to detachment of the vitreous body, and by extension of the lesion to the equator of the ocular globe, where the retina is most intimately connected with the vitreous, the tension causes a rent in the retina behind which passes the fluid which has gathered between the detached vitreous body and the retina. Now, it is not always possible to find this rent, although Nordensen, whose research goes far to confirm the explanation given by Leber, found the tear in nearly forty per cent. of the cases in which he looked for it. No doubt it was present in many others, but escaped observation owing to opacities in the

media, or because it was far in the periphery of the fundus. The primary cause of the pathological change in the vitreous, which thus shrinks and occasions traction, is believed by Nordensen to be disease of the choroid and ciliary body; hence the greater liability of this accident in eyes affected with advanced and progressive myopia.

The objective symptoms of detachment of the retina, as furnished with the ophthalmoscope in the direct method of examination, consist in an alteration of refraction at the area of separation, the surface of the elevation thus produced being out of focus as compared with the rest of the eye-ground. The detached retina appears as a gray or bluish-gray membrane, stretching forward into the vitreous, and containing folds which give rise to a sheen. The intervening furrows present a greenish-gray reflex, and the whole trembles with the movements of the eye. When the underlying substance is solid, however, neither folds nor tremulousness are present. . Not uncommonly it is possible to demonstrate rents in the detached retina, through which the dull color of the choroid is readily visible. The importance of these in regard to the mechanism of the affection has already been pointed out. In extensive detachment of the retina, the membrane may have floated so far forward in the vitreous that it is possible to see it even without the aid of an ophthalmoscope. The retinal vessels present characteristic features. First, they lose the light streak, and finally appear as dark, tortuous cords, often smaller than the normal size, and when they are folded backward, they pass out of focus at the edge of the detachment, which is often sharply marked from the normal fundus. Indeed, there may be a yellowish border and occasionally accumulated pigment. Naturally, the discoloration of a detached retina depends upon whether the case is recent or not, and upon the character of the underlying substance. In the earlier stages the transparency is not lost, and the gray color previously described is not present. The detachment is either partial or complete, and may occupy any portion of the fundus, but most commonly is found below, even when it has begun in the upper part. Detachments in the form of a series of furrows are sometimes found, and also circular circumscribed separa-Occasionally, the subjective symptoms of detachment are present, although the ophthalmoscope fails to reveal any elevation in the retina. Over this area, however, as Loring has pointed out, there is complete loss of the light reflex from the retinal vessels. Unless the macular region is directly involved, vision is

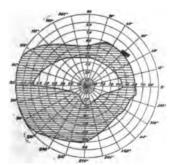
not obliterated, although there is always more or less interference with sight. This may suddenly, or, like the detachment itself, may arise slowly.

The field of vision is lost in an area corresponding to the detached retina, the completely darkened portion often being bordered by a zone of imperfect vision, which corresponds to an area of the retina not yet separated, but elevated above the normal plane. If the retina is detached below, the upper portion of the field is obliterated; if above, the lower; and so on. Occasionally disturbances in the visual field are not present in the early stages of retinal detachment, because the recently-detached retina retains its function; hence the restriction of the field may escape observation, unless, as Berry suggests, the examinations be made with subdued light.

The objective symptoms of this affection consist in a distortion of objects, floating spots before the eye due to frequent vitreous opacities, an appearance like a cloud due to the scotoma produced by the separated area, and sometimes phosphenes.

There is very little difficulty in making a diagnosis of extensive detachment of the retina by attending to the symptoms which have already been described, and if the media are sufficiently clear, the ophthalmoscope is usually an all-sufficient method of investigation. When the vitreous is full of opacities, however, or when the detachment of the retina has occurred in connection with irido-cyclitis, and the inflammatory products have blocked the pupil and rendered ophthalmoscopic examination impossible, the field of vision gives the

Fig. t



Field of vision of a case of chronic irido-cyclitis, with detachment of the retina.

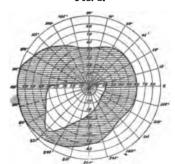
best information. This is well illustrated in the diagram which I present to you taken from a case of chronic irido-cyclitis and probable detachment of the retina.

It is not always easy, however, to make a differential diagnosis between detachment of the retina and sarcoma of the choroid, or, indeed, any intraocular growth. The points upon which a differential diagnosis are based are the following: In choroidal sarcoma the defect in the field of vision is more sharply circumscribed, the central vision less decidedly affected, and the overlying retina exhibits no tremulousness. Moreover, the tension is apt to be diminished in detachment of the retina and raised in intraocular growth. None the less, errors in this respect have not infrequently been made, and more than one acute diagnostician has hesitated for a long time between the diagnosis of idiopathic retinal detachment and choroidal sarcoma.

To illustrate the subject which we are discussing, I present for your consideration four cases of detachment of the retina.

Case I.—Mary S., a woman, aged thirtyeight, about two years ago suddenly experienced a cloud before the left eye, and on testing in a rough way her own vision, found that it was materially reduced or practically absent in this eye. Presumably the detachment of the retina, which you can see with the ophthalmoscope, happened at this time. About a year and a half ago she was under treatment in the

Fig. 2



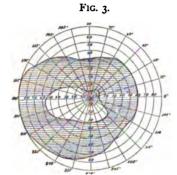
Field of vision of Case I., left eye.

Philadelphia Polyclinic, but without material The right eye is not far from normal, benefit. being slightly hypermetropic in refraction. the left eye, also hypermetropic, there is a huge detachment of the retina, the whole lower half of this membrane being separated, floating forward in the vitreous as a grayish-green membrane at an elevation of 7 or 8 D. This diagram illustrates the field of vision, the outer continuous line marking the boundary of the normal visual field, the shaded area where vision was lost, and the inner white area that portion of the field which is still preserved. representing the extent of retina which is still functionally active and in place.

CASE II.—Franz G., a young man, aged twenty-two, born in Germany, states that as

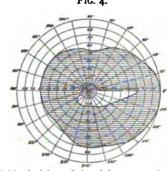
long as he can remember he has never seen well. There is no history of blindness in his family. He has suffered from rachitis, and now has well-marked phthisis of the left apex. In 1890 he consulted Duke Carl Theodore, of

thirteenth year he had good eyes. Then he experienced an attack of chorea, after which the vision was poor, and he attended Wills Hospital under the care of Dr. Harlan, being an in-patient for about six weeks, and after-



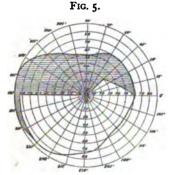
Field of vision of the left eye of Case II.

Bavaria, and Berlin, of Stuttgart, and underwent two operations, probably scleral punctures, to the method of performing which I shall presently refer. The vision of each eye is extremely poor, fingers being counted with difficulty in the lower field. In the right eye the cornea is clear, the disk is oval, gray, and at its outer margin there is a slight crescent of choroiditis. There is a huge detachment of the retina not far from complete in the right



Field of vision of the right eye of Case II.

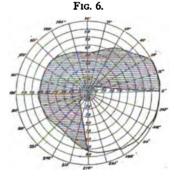
wards an attendant at the dispensary service for a number of months. Improvement occurred, because he was able to go to work, but after ceasing his attendance at the hospital, he did nothing for his eyes except to visit an irregular practitioner, who promised to cure him by furnishing him with glasses. Gradually the disease progressed, and finally his eye-sight became so deficient that in January of last year he entered the hospital. His condition



Field of vision of the left eye of Case III., taken with two candles.

eye, and nearly complete in the left. The greatest height of the detachment is +7 D, and the undetached patch of retina in the right eye shows evidences of slight choroiditis. In the left eye the disk is oval, the veins very large, and there is a similar but not quite so extensive detachment of the retina, the greatest height of which is 5 D. There are no demonstrable vitreous opacities. The accompanying diagrams, constructed on the plan previously described, show what a very small portion of the field remains and how very near the macula the lesion has progressed.

CASE III.—Charles A., a man, aged twenty-five. American by birth, states that up to the

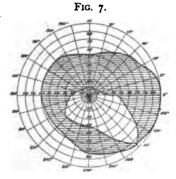


Field of vision of the right eye of Case III.

then was very much as it is now, and did not improve under the medicinal treatment, which I shall presently describe. He declined of erative interference, and, indeed, it does not appear to be a case in which much hope could be extended from this source. In the right eye he can barely count fingers in the lower and outer quadrant of the field, and in the left eye he has light perception in the lower portion of the field. There is extensive detachment of the retina, so that in the right eye, as you see from the diagram, there remains only a very small portion of vision in the lower and outer quadrant of the field. In the left eye it is possible to determine the field of vision with can-

dles, one being used for fixation and the other for the test-object, and you see that light perception is present only in part of the lower half of the field. In both eyes the detachment involves the macular region. With the ophthalmoscope an extensive detachment of the retina is evident, which floats up in the vitreous, spots of choroiditis being evident in the portion not yet detached, while the vitreous is full of floating opacities. This is an extensive state of disorganization, offering very little hope so far as remedial agents, either operative or otherwise, are concerned.

CASE IV.—Hugh M., a man, aged fifty, presents an interesting state of affairs. The right eye was injured by a blast twenty-four years ago, and was considered by the patient to be valueless until his left eye was affected. Now it is the more useful organ of the two. an irregularly oval pupil, with adherence of the iris to a small scar in the cornea, and a separation of the iris at the outer ciliary margin. Over the cornea are scattered several cic-The remains of the capsule of the lens is seen to border the pupillary margin. It is not possible to obtain a view of the fundus, but from the diagram of the field of vision, which I present to you, you observe that probably there is detachment of the whole lower half of the retina, with concentric restric-



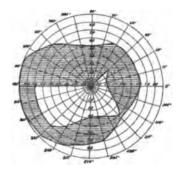
Field of vision of the right eye of Case IV.

tion of the field of vision furnished by the unseparated area. Fortunately, however, the macular region is not involved, and with a cataract-glass the patient's visual acuity is <sup>20</sup><sub>cc</sub>.

The sight of the left eye was good until July, 1891, and then, while he was working, sudden blindness occurred. There has never been pain nor inflammation. He consulted Dr. Sutphen, of Newark, N. J., who has very kindly furnished me with an account of what he did for the patient at this time. He was ordered to bed and treated by injections of pilocarpine, and later iodide of potassium was administered internally. There was steady increase in the

detachment until it became total, and scleral puncture was made upon the left eye December 1. 1801. There was no reaction whatever from the operation, except slight ædema of the conjunctiva, which lasted three days. Material improvement in vision was noted from the second day following the operation. patient remained in bed three weeks, and left the hospital January 15, 1892, with the retina in its normal position and vision 38. The patient states that, contrary to Dr. Sutphen's orders, he went to hard work, and very speedily his sight became as bad as ever. He declares that he was ashamed to go back to consult Dr. Sutphen, and well he may have been, because, owing to his own foolishness and disobedience, the benefit of Dr. Sutphen's excellent treatment was lost, and there has





Field of vision of the left eye of Case IV. Test-object a candle-flame.

been a return of the disease, so that there is now an extensive detachment of the retina, which has involved the fixing-point. The disk, which is visible, is oval, and contains a small, central excavation, with a dot of pigment upon its margin. The detached retina floats up as a gray veil in the vitreous, which, in its turn, is filled with opacities, the lens is hazy, and there are considerable cortical opacities in the crystalline lens downward and inward. The accompanying diagram exhibits the field of vision, and was obtained by causing the patient to fix upon a candle placed at the centre of the perimeter, while a large, white test-object was utilized to map out the field.

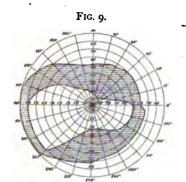
These cases serve to illustrate the affection which we have been discussing this afternoon, and also to introduce the concluding remarks in regard to the *treatment*, which naturally divides itself into non-operative or medical treatment, and operative interference.

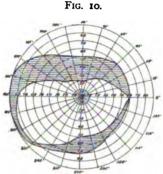
In former times many of the patients were subjected to the severe, so-called *antiphlogistic regimen* which was so much in vogue,—namely,

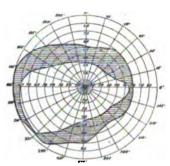
free bloodletting from the temple, either with leeches or wet-cups, sinapisms, drastic purges, active foot-baths, and even setons. Pursuing the same line even at the present time, derivative medication has been largely employed, and many cases of detachment of the retina, in addition to this, have received full doses of iodide of potassium and mercury, either by the mouth or by means of inunction, with the hope of absorbing the subretinal fluid, very much on the same principle as it was hoped to influence an effusion into the pleural sac.

Less depressing, but requiring a great amount of patience on the part of the sufferer, is what the field of vision. Central vision, however, did not improve.

A third form of treatment may be characterized as the diaphoretic method. In this the patient is confined to bed, either with or without a pressure bandage, and, according to his power of endurance, freely sweated with hypodermic injections of pilocarpine, alternating sometimes with the administration of salicylate of sodium. This treatment has much to commend it, and there are numbers of cases on record in which decided improvement has occurred. It should be remembered, however, that not every patient is able to withstand the depressing influence of exhausting sweats, and very often, in the hope







Field of vision in a case of retinal detachment before the use of eserine.

Field of vision after one month of eserine-instillations.

Field of vision after five weeks of eserine-instillations.

may be called the rest-cure for detachment of the retina. This consists in placing the patient on his back, giving him an almost entirely liquid diet, chiefly composed of milk, and keeping both eyes closed with a pressure bandage. In a few instances this method has been followed by good results, and there has been reattachment of the separated membrane; but, like all other procedures connected with the treatment of detachment of the retina, it has a long list of failures to its credit.

In some instances, especially on the recommendation of Guaita, there has been amelioration of the symptoms of retinal detachment and increase in the field of vision under the influence of eserine instillations, although there was resumption of the symptoms upon ceasing the use of the drug. In several cases under my own care I tried very faithfully this use of eserine, adding to it at times a pressure bandage, but not confining the patient to bed. one instance small doses of iodide of potassium were also taken, but only for a short period of time, and probably not in sufficient dose to influence the progress of the disease. The accompanying diagrams illustrate what effect was produced by this method in one case, and you observe there was slight increase in the size of

of reattaching a separated retina, undue depression of nutrition has been produced by the vigorous measures employed. It is, however, a method which should be thought of first of all, and in suitable cases should always be employed, as we have the experience of many observers for encouragement; for example, Roosa reports that in the Manhattan Eye and Ear Hospital, in quite a large proportion of cases, good results have been obtained from the rest, bandage-, and pilocarpine-treatment.

A number of operative procedures have been devised; for example, sclerotomy (Wolfe, Abadie), iridectomy (Dransart, Brettremieux), methods which, although they have a few cures to their credit, are generally condemned. Naturally, most of the attempts have been towards the evacuation of the subretinal fluid by puncturing the sclerotic, as was originally suggested by Sichel in 1859. At one time after the puncture De Wecker suggested drainage of the subretinal fluid by the introduction of a gold or catgut thread. Aspiration without drainage has been practised by Galezowski, and Graefe, in some instances, entered the globe with a broad cataract-needle at the side opposite the detachment, cut into the retina from the vitreous, and allowed the subretinal

fluid to pass into the vitreous body. Galvanopuncture was at one time proposed by Abadie, the puncture being made backward from the ciliary region. In fresh cases, but not in old ones, some good results were reported. This method has quite recently been advocated again by some French surgeons.

In a number of instances, in addition to scleral puncture, irritating fluids-for example, Condy's fluid and tincture of iodine—have been injected with the hope of producing adhesive inflammation. The cure of retinal detachment by the injection of iodine into the subretinal space received a great impetus after the publications of Schoeler, in Berlin, who reported a number of successful cases. Soon, however, other operators who tried the method recorded examples in which destructive inflammation followed the method, with complete loss of the eye; and in a valuable series of cases reported by Dr. Bull, of New York,—valuable because they seem to show very conclusively the danger of the method,—Schoeler's injections of iodine were proved to be of no value. Perhaps experience with this measure is not sufficiently great to condemn it entirely, but it is not enough to recommend it as a therapeutic measure free from danger.

Scleral puncture may be recommended as the method least likely to do harm, and perhaps most likely to do good, but only after a thorough rational medicinal treatment has been employed. The precise position of the retinal detachment must be ascertained, the eyeball is rotated in a suitable direction, a narrow Von Graefe cataract-knife is thrust directly through the sclera and choroid, turned slightly upon its axis, and the subretinal fluid allowed to drain away beneath the conjunctiva. Very little reaction follows, and, as in the case quoted from Dr. Sutphen, good results will sometimes follow. Great care should be taken to perform a perfectly antiseptic operation, and, as Dr. Sutphen suggests, the rotation of the eyeball back to its normal position when released by the fixation forceps, virtually converts the scleral wound into a subconjunctival one, and this appears to be advantageous in preventing infection.

Hugh M., the case to which I have already called your attention, has implored me to repeat the operation which more than a year ago, when performed by Dr. Sutphen, was productive of good results. It does not seem to me to hold forth much hope now, but, as experience shows it can do no harm, I will perform for you the operation of scleral puncture. I seize the eyeball with fixation forceps, rotate

it inward, and thrust a Graefe cataract-knife through the sclera between insertion of the external and inferior rectus at about the equator. I now turn the knife slightly upon its axis, the wound gapes, and you see the escape of serous fluid, which forms a good-sized bleb beneath the conjunctiva. A double figure-of-eight bandage is applied, and the patient put to bed.

A very interesting résumé of the methods of treatment of detachment of the retina has been published by Emil Grosz.\* After gathering together his statistics from the reported cases of the various procedures, he finds that in sixty-five per cent. of the cases puncture of the retina, in forty-four per cent. puncture of the sclera, in sixty-six per cent. iridectomy, and in fifty-nine per cent. pilocarpine injections remained fruitless. He holds, however, that these results are not trustworthy. because most of the authors were satisfied with an indefinite expression of improvement without careful investigation of the visual acuity and the duration of the improvement. In contrast to these statistics, he gathers together those from the Ophthalmic Clinic of Professor Schulek, in Buda-Pesth. In the last fifteen years 6971 cases were treated, and 67 of these were affected with retinal detachment. The various methods and the results are thus summarized:

- 1. Puncture of the sclera in 21 cases, with negative result 14 times, improvement 4 times, and deterioration three times.
- 2. Iridectomy in 18 cases, with negative result 7 times, improvement 6 times, and deterioration 5 times.
- 3. Puncture of the retina in 2 cases, with negative results in 2.
- 4. Pilocarpine injection in 16 cases, with negative results in 10, and improvement in 6.
- 5. Combined puncture of the sclera and pilocarpine injection in 9 cases, with negative results in 6, and improvement in 3.
- 6. Iodine injections, after the method of Schoeler, in 2 cases, with negative results in 2

Improvement, therefore, was obtained with pilocarpine injections in thirty-three per cent., iridectomy in thirty-three per cent., puncture of the sclera in twenty per cent., combined pilocarpine injection and puncture of the sclera in thirty-three per cent. He naturally concludes from these statistics that pilocarpine injections should be considered first of all, then iridectomy, and afterwards puncture of the sclera. Iridectomy should be first performed because, after an

<sup>\*</sup> Abstract in Nagel's "Jahresbericht für Ophthal mologie," vol. xxi. p. 95.

improvement in the circulation of the globe, there is more probability of absorption or drainage of the subretinal fluid. No doubt all of us 'agree that pilocarpine injection should receive the first place in our methods of treating this disease, but most of us do not accord the second place to iridectomy, but, as I have already stated, prefer puncture of the sclera in the manner just performed.

PHENATE OR CARBOLATE OF COCAINE
AS A LOCAL ANÆSTHETIC.

By D. B. KYLE, M.D.

Assistant Demonstrator of Pathology in the Jefferson Medical College.

THE need of a good local anæsthetic from which there is no danger of oversystemic action has long been felt by the medical profession.

Probably no better drug than the muriate of cocaine has been produced, but it is open to the one serious objection that when applied to cut surfaces it produces dangerous systemic action, endangering the life of the patient, and in a limited number of cases causing death.

Believing the combination of carbolic acid and cocaine to be an excellent one theoretically, from the fact of both possessing anæsthetic properties, and the former one of the best known antiseptics, the writer decided to test the practical use of the drug.

The phenate of cocaine is one of the many preparations by Merck. It is described as a slightly-colored substance, of the consistence of thick honey, which readily melts when heated, and containing seventy-five per cent. of the cocaine alkaloid.

It is soluble in alcohol of from thirty to fifty per cent., the solution having a faint odor of carbolic acid.

The dose of the drug is from  $\frac{1}{12}$  to  $\frac{1}{6}$  grain, repeated every four hours. Locally, it is applied in solutions varying from one to ten per cent.

How much the antiseptic properties of the carbolic acid are affected by the chemical combination we leave open for discussion, suffice to say that the solution was applied to cut surfaces in which no other antiseptic was used, and in all cases the results were equally as good as in those where such solutions as peroxide of hydrogen or carbolized benzoninol were used.

As to the antiseptic properties, some few tests have been completed and others are being carried on.

These tests confirm the statement that the

combination still possesses antiseptic properties, but not equal to the carbolic acid alone.

It is the writer's belief that it at least retards the growth of micro-organisms.

As a local anæsthetic, the power of cocaine is very great over limited areas. This is especially true when applied to mucous membranes. Applied to such structures as the Schneiderian membrane, the mucous covering of the glans penis, or by hypodermic injection, it causes limited blood-supply by contraction, and produces temporary anæsthesia.

If applied to the tongue, it temporarily perverts both taste and tactile sensibility. Applied to the ocular conjunctiva, it not only produces profound anæsthesia of this membrane, but causes dilatation of the pupil, partial paralysis of accommodation, enlargement of the palpebral fissure, slight lachrymation, and often temporary ptosis.

The physiological action of the phenate of cocaine is practically the same, at least as far as the writer has been able to test.

It might be best to state that the writer's experience with the drug has been limited exclusively to throat and nose work.

In testing its anæsthetic properties, ten different solutions were used, ranging in strength from one to ten per cent., the six- and eight-per-cent. solutions answering as well for all operations as the nine and ten. The applications were limited to the nasal and pharyngeal mucous membrane.

For thermo-cautery application in follicular or granular pharyngitis, where the burning is superficial, the two- to four-per-cent. solution gave equally as good results as the higher ones. The one- and two-per-cent. solutions were not satisfactory; for prolonged operations and those involving deeper tissue the stronger solutions must be used.

As a local anæsthetic, I have used the drug in twenty-four separate cases, as follows: Four cases when removing the hypertrophied inferior turbinated bone by means of saw and cautery snare; two cases of exostosis of septum removed by saw and knife; five cases of enlarged tonsils reduced by thermo-cautery; three cases of follicular pharyngitis treated by puncture with cautery needle; two of adenoid vegetations at the vault of the pharynx treated by flat, curved cautery-blade; three cases of hypertrophic rhinitis; one case of hay fever, on which I operated for hypertrophied turbinated bone; and four cases of nasal polypi.

In each of these cases I kept a record of the number of times applied and length of time before anæsthesia was produced. Various theories are advanced as to how phenate of cocaine acts, whether by the paralyzing of the terminal twigs of the sensory nerves, or by vaso-motor action, rendering the nerves bloodless, and thereby rendering them unable to transmit sensory impressions.

However, this we will leave each to his own belief; we know it acts as a local anæsthetic.

Combined with the aqueous extract of witchhazel, it is an admirable astringent not only in hemorrhage but in acute catarrh.

In one case of exostosis of the septum and two of hypertrophied turbinated bone, the anæsthesia was not satisfactory, as is usually the case when cutting of the bone or where deep tissue is involved; the same can be said of the muriate of cocaine.

The length of time to produce anæsthesia is somewhat longer than that required for the muriate; but, when once produced, it is more lasting. In the twenty-four cases reported, the average time was seven minutes, the total number of applications at different sittings being one hundred and fifty.

The astringent properties of cocaine are well known

Having used the aqueous extract of witchhazel with success in cases of nasal hemorrhage, I used this in making the test solutions.

As the phenate of cocaine is insoluble in the witch-hazel, I first dissolved it in alcohol, then added this to the witch-hazel.

An equally good combination is phenate of cocaine thirty grains, menthol fifteen grains, to one ounce of witch-hazel. This is, however, open to the objection of the bad after-effects of menthol, first causing contraction of the blood-vessels, which is afterwards followed by congestion, with decided irritation of the mucous membrane.

In comparing the phenate with the muriate of cocaine, I believe it to be as good a local anæsthetic, and in none of the one hundred and fifty applications of which I kept record, and I feel safe in saying as many more of which I kept no record, did I have symptoms of cocaine-poisoning, nor did the patient complain of any bad after-effect.

Yet in three cases there was cardiac disease and in one albuminuria. These conditions are known to be especial contraindications for the use of the muriate.

As an antiseptic, I believe it equal to any carbolized solution usually used in nasal operations.

It can be safely used on cut surfaces, which, in using the muriate, is to be carefully avoided.

It is superior to the muriate in the fact "that it coagulates the albumin in the tissue, prevent-

ing the absorption of the cocaine, thereby prolonging the anæsthetic effect, and lessening the danger of systemic poisoning" (Hare).

Dr. Isador Głuck has for several years added carbolic acid to solution of muriate of cocaine for the purpose of avoiding the after poisonous effects.

Dr. Roberts Bartholow also states that phenol added to muriate of cocaine will lessen the danger of systemic poisoning.

Dr. Von Oefele uses the drug exclusively in the place of the muriate, locally, internally, hypodermically, and in powder.

For operations involving the deeper tissue, the drug must be used hypodermically, the eight-per-cent. solution usually producing sufficient anæsthesia. The alcoholic solutions give better results, but are more irritating.

While we must not draw too positive conclusions from these few cases reported, yet the results are such as to justify its use in minor surgery.

#### PIPERAZIN IN THE TREATMENT OF STONE IN THE KIDNEY— REPORT OF CASES.

By DAVID D. STEWART, M.D., Lecturer on Clinical Medicine in the Jefferson Medical College.

DIPERAZIN, as is perhaps now generally known, is one of the more recent coaltar derivatives. It is chemically diethylenediamine, a piperadin in which one CH\_group is replaced by an amide. It is freely soluble in water, and in cold aqueous solution will dissolve twelve times as much uric acid as will lithium carbonate. Its urate, which is said to be always a neutral salt, is seven times more soluble in water than is the corresponding salt of lithium, the most soluble of the metallic urates. Piperazin is a stable compound, apparently not undergoing decomposition in the organism. It is readily excreted by the kidneys, and may be detected in the urine by appropriate tests in a few hours after a single dose. The knowledge of the latter of the foregoing facts has led naturally to a wide clinical trial of piperazin in the uric acid condition, especially in gout and in uro-lithiasis, with a pretty general unanimity of opinion as to its value in uric acid gravel and calculi, although curious contradictory results are reported as to its influence upon the quality and quantity of urine. It was with a view of testing its action in cases of uro-lithiasis, and concurrently to ascertain for myself its influence upon nitrogenous excretion in the urine, that I began its trial in a number of cases of uric acid diathesis, of which I shall now only report several of suspected renal calculus in which a careful clinical examination of the remedy over quite a lengthy period was made, with accompanying thorough microscopic and chemical examinations of the urine.

It goes without saying, from what is known of the action of piperazin, that, of all conditions, uric acid gravel and stone is the one most likely to receive substantial benefit from its use. Despite the affinity of piperazin for uric acid, and the extreme solubility of its urate, little can be expected from it in uratic chronic multiple arthritic enlargement, at least in the doses generally administered,—15 grains daily. In much larger amounts, such as a drachm or two daily, exhibited over a continuous time, more promising results may be anticipated; whether, however, such doses will be tolerated without injury is yet to be determined. The present unfortunately high price of the drug prevents the determination of this question.

The first of these cases of uro-lithiasis is Miss L. F.,\* aged twenty-eight, who came under observation February 12, 1891, with a history of an almost continuous ache in the right loin for seven to ten months. Paroxysms of pain at times occurred, shooting towards the bladder. She had been passing gravel more or less continuously for several years. There were anorexia, constipation, bad taste, leucorrhœa, painful menstruation, and severe headache occurring about twice weekly. She was in a melancholic condition; was persistently lowspirited, the latter, doubtless, being induced somewhat by the recent death of her favorite cousin from a somewhat similar ailment. Her urine then was noted to be highly acid, of a specific gravity of 1028, and to contain neither albumin nor sugar. Microscopically, there were numerous crystals of ammonium urate, large excess of free uric acid, and microscopic (goodsized) calculi of both ammonium urate and uric There were also amorphous urates, a few pus-cells, red blood-corpuscles, and epithelium from the kidney's pelvis and from the bladder. There was then present deep-seated tenderness in both flanks, but no palpable tumor. She was placed upon large doses nightly of nascent potassium citrate, was given hot water freely before breakfast, and was directed to take liberally of an alkaline mineral water through the day, and to live in the open air.

From the date of the first visit she was under observation quite constantly, with the exception of an occasional interval of about two months, until piperazin was begun in January, 1892. In the early part of this period her general condition improved somewhat under remedies directed to assisting the impaired digestion and the use of arsenic after meals. vegetable salts of potassium were given for a number of months in very full doses, intermittently. A lithia-water was also taken freely. Potash could not be continued for any length of time, from the almost invariable gastric derangement it occasioned. During this period frequent chemical and microscopic examinations of the urine were made. The result of these was similar to that above recorded. Pus- and redcells were never present in large amount, nor could pus even be detected by Donné's test. Crystals of uric acid and urates were usually present in huge excess, and occasionally calcium oxalate abounded. Cells from the kidney pelvis were common, and on several occasions hyaline and granular casts were seen. The daily quantity of urine was subnormal,about 11/2 pints, and often but 17 to 18 ounces,-unless considerable doses of potash or large quantities of fluids were taken. The urea was always low, on several occasions averaging between 142 and 216 grains. Attacks of gravel were very frequent, but were usually dissipated by potash, to promptly return on its discontinuance, despite care in diet and attention to general hygiene. For this reason and because of the disorder of digestion full doses of the alkalies occasioned, she, after a few months, abandoned their use, and then symptoms of stone in the kidney became more pronounced. There was constant severe pain in the loin, with increased tenderness on pressure, and growing fulness, dulness, and resistance in the flank. Professor Keen at this time saw her with me, agreeing as to the probable existence of stone, and advised a nephrotomy. To this consent could not be obtained. I now lost sight of the case for several weeks. During this time she took a great deal of lithia-water, but no drugs. Early in January, 1892, when I again saw her, the symptoms were those of calculus hydronephrosis. She was passing less than 2 pints of urine daily, and often scarcely a pint. There was prominence, tenderness, and dulness in the left hypochondriac and iliac regions, the dulness extending towards and near the umbilicus, and, posteriorly, to the usual situation of the kidney. I now began a brief trial of two

<sup>\*</sup> A cousin of the patient upon whom a nephrotomy for calculus pyelonephrosis was done by Professor Keen, and reported by us in the THERAPEUTIC GAZETTE, January 1, 1892. These two young women strikingly resembled each other in appearance, disposition, and temperament.

drugs,-diuretin and piperazin,-a barren result with which, I informed her, would necessitate immediate operative interference. uretin was first prescribed, principally because she was then suffering greatly from migranous headache, which, it was thought, diuretin would relieve. Little was expected from either it or piperazin on the kidney condition. About a drachm daily of the former was taken for a week or ten days, totally without effect on the urine. Piperazin was now ordered in doses of 15 grains daily. The issue of the use of this remedy seemed quite extraordinary, so promptly and decidedly did benefit accrue. The urine, which had been unaffected in amount by diuretin, after taking piperazin for three or four days, underwent a most decided increase; from but a pint daily it rapidly rose to 4 pints. When seen on February 27, 1892, she had been taking piperazin for over two weeks. There had been voided in the preceding nine hours 5 pints, a much greater quantity than she is aware of passing before or since.\* The loinpain was much diminished, and the fulness and dulness occupied a much less area. Her general condition in the two and a half weeks had also undergone a striking improvement, noticeable to all. Appetite and digestion were asserted to be better than for several years,—the bad taste to have disappeared; in short, she looked better and felt generally improved, an amelioration, doubtless, largely of psychical origin, contributed to by the feeling that her condition was no longer one of desperation. No minute examinations of urine were possible immediately preceding the administration of piperazin, her condition not admitting of delay in its use; nor was any attempted directly after she was seen on this occasion, it being intended, after the condition had ameliorated sufficiently to allow discontinuance of the drug for a time, to undertake systematic examinations. To my regret, also, it was impossible to keep a continuous record of the daily amount of urine passed from the time piperazin was first begun; this was, however, done subsequently, on starting anew with the remedy, after its temporary withdrawal. From February 12 to April 2 (the last, one of the dates of temporary discontinuance) the daily dose was from 12 to 20 grains, usually the latter. The daily quantity of urine was always fair and often large. She was careful, by direction, to take the same amount of fluid daily,

averaging about 1½ pints, not including that in the food eaten. On March 10 the amount passed was 65½ fluidounces; specific gravity, 1010; faintly acid; urea, 300 grains. March 11 to 15, the amounts were 61, 70, 59½, and 70 fluidounces. March 16, 50 fluidounces, faintly acid; specific gravity, 1020; urea, 500 grains; uric acid, 17 grains.† March 17 to 23, the amounts were 62, 47, 63, 64, 62, 54 fluidounces. March 30 and 31, 51 and 53 fluidounces.

Piperazin was discontinued from April 2 to 13. During the period of seven weeks in which the drug was taken, improvement continued, though not so markedly as at first. Pain, or a sensation of soreness in the loin, persisted; much slighter, however, than formerly, and little tenderness was induced by pressure over the area of fulness and dulness in the lumbar region. This last was now present in moderate degree only.

The subjoined table gives the consecutive daily specific gravity and quantity of urine, and also the variations in its most important nitrogenous constituents, estimated from mixed twenty-four-hour specimens, prior to and following the administration of piperazin.

In all estimations in this paper the acidity, urea, and uric acid were obtained by the following methods: The acidity was estimated by titration with a  $\frac{N}{10}$  solution of NaHO; titrations were made as early as possible after receiving the specimens, which were usually sent promptly after mixing at the expiration of each twenty-four hours. Urea was estimated by the hypobromite process (bromine itself being always used), with the apparatus of Parke, Davis & Co. Uric acid was estimated by the now well-known and reliable method of Haycraft; as with the urea estimations, a second of uric acid was often made to confirm the first. ‡

Microscopic examinations were made between April 8 and May 9. In all specimens there were an abundance of amorphous urates, free uric acid and ammonium urate crystals, large

<sup>\*</sup> The passage of this large amount, under the conditions narrated, can only be explained by the giving way of a hydronephrosis.

<sup>†</sup> Within these dates other urea examinations were made, but as the urine was partly decomposed, the results were considered untrustworthy, so are not here recorded. A number of other uric acid estimations were also made, but by a method the technique of which was afterwards proved faulty, so that no account is here taken of these.

<sup>‡</sup> No account of the daily elimination of urinary solids is here appended, as these may be readily approximately estimated by multiplying the last two figures of the specific gravity of the urine by 2.33 (Christison's formula), or by 2 (that of Trapp's). This equals the percentage in grammes calculated on 1000 cubic centimetres.

quantity of granular *dèbris*, and epithelium from the kidney and bladder.

The urine was not examined from this on. An estimation of the amount passed in the twenty-four hours, however, was still frequently made. From May 12 to 24 the daily quantipresent in a limited portion of the situation previously occupied by the hydronephrosis, but no tenderness, even on deep pressure, could be elicited in this region. No gravel has been noticed in the urine at any time from the date of commencement of piperazin, though looked

CASE I.—MISS L. F.

	CASE I.—WISS L. F.						
Date.	Daily amount of urine in fluidounces.	Specific gravity of mixed 24-hour specimen.	Degree of acidity cal- culated on too c.c. of uripe.	Daily elimination of urea in grains.	Daily elimination of uric acid in grains.	Daily dose of piperazin,	
April 8. April 11. April 12. April 12. April 13. April 14. April 16.		1016 1015 1016 1010 1013	22 20 28 15 18 	307 300 450 250 331 	13 11½ 15 8 12 	None for 6 days.  None for 7 days.  None for 9 days.  None for 10 days.  None for 11 days.  18 grains of piperazin daily.  18 grains of piperazin daily.  18 grains of piperazin daily.  Through a misunderstanding specimens were not sent on the 14th,  15th, and 16th, so that no estimations could be made. Piperazin  was, therefore, stopped until April 28, that consecutive daily examinations might be again made immediately before taking and while on the drug.	
April 24. April 25. April 26. April 27. April 28. April 29. April 30. May 1. May 2. May 5. May 5. May 6. May 7. May 8. May 9.	50 51 461 56 431 60 55 50 55 44 60 44 53 51 47	1013 1015 1011 1012 1020 1012 1020 1012 1020 1016 1019 1013	12 20 30 24 30 14 12 20 20  10 10 22 30 20	273 273 245 316 496 330 420 386 423  440 400 390 280 342	15abata 15abat	No piperazin for 7 days. No piperazin for 8 days. No piperazin for 9 days. No piperazin for 10 days. No piperazin for 11 days. 18 grains piperazin taken. 23 grains piperazin taken. 33 grains piperazin taken. 23 grains piperazin taken. 23 grains piperazin taken. 25 grains piperazin taken. 26 Specimen of urine not received.	

ties were in fluidounces 47, 44, 36½, 55½, 49½, 56½, 44, 43, 42, 48, 53, 50, 50. During the second half of June and the early part of July similar counts were made, which it is needless to reproduce here, since they deviated very little from the foregoing, like them being quite normal.

Piperazin was continued in daily quantities of 20 grains until August 1. It was then withheld, it being concluded that the patient had entirely recovered. Four weeks succeeding its discontinuance the urine was measured for four consecutive days. The amounts were, in fluidounces, 50, 52, 48, 47. All loin-pain and discomfort to manipulation in the renal region had completely disappeared when the patient was examined on June 3, and had not since reappeared when last seen, on October 1, 1892, though she was leading a most sedentary life and taking little or no exercise in the open air. When the abdomen was last thoroughly examined, in June, resistance and dulness were still

for by the patient. Prior to taking piperazin, the freshly-voided urine almost constantly contained it, but in less amount than when the patient first came under observation. No untoward results occurred from the long-continued employment of piperazin. Menstruation during several monthly periods was profuse, and more frequent than had been customary. What effect piperazin had in the production of this, I do not know. Appetite and digestion seemed to be better while piperazin was taken. Headache, from which she has always been a sufferer,—probably largely due to eye-strain,—continues as before.

The second case is one of striking interest, because of the long-continuance of symptoms of stone in the kidney, and the fact that lack of certain common indications of that affection, and that of an accompanying pronounced pyelitis, prevented its recognition by a considerable number of practitioners consulted at various times.

The patient came under observation accidentally. My attention was incidentally called to him as he lay in a paroxysm of colic, in the out-patient ward of the Jefferson Hospital. appeared that he had been in the habit for some time of going to the resident about twice weekly for hypodermic injections of morphine. because of recurring attacks of severe pain in the right lumbar region, which came on suddenly, incapacitating him for work, and which were ultimately relieved by rest and full doses of morphine. At first I was inclined to the opinion that the man was a malingerer; but a careful inquiry into his history, and an examination of the urine, which I had him send me on the day in which I first saw him, caused me to take a different view of his complaint. The following are the chief points in the case:

A. L., aged thirty-eight; clerk. First seen December 14, 1891. For seven years he had had, at intervals of four days to two weeks, attacks of severe pain in the right loin, occurring suddenly, and lasting from twelve hours to one or two days. Occasionally an attack would continue for almost a week, during which pain never would be absent, though not constantly The initial attack occurred while serving as a United States army private. was then on the plains, engaged in digging holes for the erection of telegraph-poles. pain was always deep-seated in the loin. could not recall it ever shooting towards the bladder or into the testicle, nor was frequent urination a symptom. During and especially succeeding the attacks he had noticed, particularly in the past year or so, that the urine was of an unnatural dark-red hue. This he had not recognized as blood, though it undoubtedly was. Vomiting was not an infrequent concomitant of severe attacks. access of pain could be elicited by manipulation in the renal region during the attacks. There was absolute freedom from pain in the intervals, and repeated examinations of the abdomen revealed no abnormity of any of the

He was a robust fellow, with good general health apart from these attacks. The habits were temperate. Gravel had never been noticed in his urine, though it might have been present preceding the appearance of the trouble, or even succeeding its onset, as it had not been looked for. He had consulted a number of physicians, who had treated him principally for gastric and intestinal indigestion. One or two had suggested nephralgia. The operation of stretching the ilio-hypogastric and ilioinguinal nerves had been undertaken by a

surgeon a year or so before with a view of thus relieving the attacks. Stone was not then suspected, it being asserted that, were it present, the symptoms suggested a new phase of that affection. It is said that the kidney was felt during the operation, and no stone detected. Despite this testimony, I believed the case in all probability one of renal calculus, and an examination of the urine during and following an attack strengthened this opinion. It was of very high color, and, after a day's standing, deposited a dark-red sediment to the extent of one-half the bottle in which it was contained. Microscopically the sediment consisted entirely of blood-corpuscles and pus-cells. taken from the upper layer had the appearance of a drop of leucocytic blood. lowest stratum consisted almost entirely of pus-corpuscles. A specimen voided two days after the attack was acid, of light amber color, specific gravity 1020, and contained  $\frac{1}{15}$  per cent. of albumin (Esbach's method). After some hours' standing, a sediment was precipitated, which, microscopically, consisted solely of pus-cells, containing entangled calcium oxalate and uric acid crystals, the last in less amount than the lime oxalate. Sufficient pus was present on decanting the urine to gelatinize the deposit with liquor potassæ, a response always obtained when this test was similarly applied to a number of subsequent specimens.

I represented to the patient that he had beyond doubt a suppurating kidney, which was in all probability due to a stone lodged therein, earnestly advising him to submit to a second operation. But to this advice he would not listen because of his previous experience in this direction.

Because of its unusual interest, the case was kept under observation that a more extended study of his condition and that of the urine could be made. It was thought that he would ultimately submit to an exploratory nephrotomy, and that thus the diagnosis could be confirmed. Little was expected from a resort to drugs because of the pronounced pyelitis complicating the condition.

I made in all thirty-two chemical and eighteen microscopic examinations of the urine. On a number of occasions two or three specimens passed at the time of an attack, at its onset, height, and termination, were examined microscopically. Pus was always present in some amount, except on a single occasion. Blood also could be noted always macroscopically and microscopically at the end of an attack, and frequently microscopically at its height; never,

however, several days after its entire cessation. Epithelium from the kidney pelvis was frequently found, and on three occasions hyaline and epithelial casts were noticed. The urine was always acid when freshly voided; it usually was quite fetid, the latter especially after standing a short time. The mixed twenty-four-hour specimens were turbid, and could not be cleared by heat and filtration. Calcium oxalate crystals were nearly always present in large amount, but occasionally uric acid and urates were in preponderance. Albumin constantly existed in small amount,  $\frac{1}{10}$  to  $\frac{1}{20}$  per cent., evidently of pyuric origin.

On several occasions the quantity of urine passed during an attack was diminished, though it was normal in amount at the termination, leading to the supposition that the ureter of the affected kidney might be temporarily closed.

On May 8, in a mixed specimen of the total twenty-four-hour urine (23 fluidounces), passed at the height of an attack, there was, in three slides examined, but one pus-corpuscle seen in one slide, three in a second slide, and none in a third, with no blood disks. There were amorphous urates and uric acid crystals. The examined portion was taken from different layers of the sediment, which, in this single specimen, was evidently due to amorphous urates and not to pus. This would indicate temporary obstruction of the ureter of the diseased kidney during this attack; for, also, immediately following it (May 9) blood and pus were present in some quantity. A daily estimate of the amount of urine passed was made, by my direction, for several months. But symptoms of closure of the ureter occurred with no frequency or constancy of relation to the paroxysms. Often, too, when a diminution in quantity of urine took place, it continued until several days after pain had ceased, with no very decided increase in amount subsequently, to indicate cessation of a hydronephrosis.\* During the last of January large doses of potassium citrate were prescribed; this salt was continued for one month. Prior to and during this time frequent examinations for uric acid and urea were made. The result of these need not be recorded here. The urea, when potash was not administered, was usually somewhat diminished, varying between 350 and 465 grains daily, and occasionally sinking to below 300 grains. The daily elimination of uric acid was usually in excess. While taking the potassium an increase in the amount of urea and a diminution in uric acid occurred, as is usual.

Piperazin was begun on March 27, 1892, and continued steadily until July, with a single interval of eighteen days. In this time he took thirty 5-gramme bottles, in daily doses varying from 12 to 30 grains. Daily quantitative examinations of the urine as to acidity, uric acid, and urea were made preceding taking the piperazin and immediately succeeding its beginning. This was done in two periods. The second is given in the subjoined table (page 25), as the dose resorted to at first was thought to be too small to materially influence the urinary secretion. Little difference, however, actually exists as to quantity or quality of urine voided at these times under piperazin.

Estimations were now no longer made. Continued daily measurements for some time of the amount of urine passed tallied closely with the foregoing. The attacks became less frequent and severe until the ensuing (last) July, when the more violent ones ceased to occur. The patient was not seen for several months until summoned December 1 for report, prior to preparing this paper. He stated then he had noticed no blood or pus in the urine since early in June, and that none of his former attacks had recurred. At intervals, varying from a month to six weeks, he feels for two or three days a sensation of discomfort not amounting to actual pain in the loin. This always disappears without his having recourse to medicine. This same discomfort he had when I saw him. A specimen of urine was then voided, and examined after standing twenty-four hours in a conical glass. It had remained clear; was of light amber color; non-fetid; specific gravity, 1020; contained no albumin by heat or nitric acid† (including overlaying a cold specimen of it with the latter), but responded slightly to the ring-test with citrated picric acid. The sediment was flocculent and very small in amount. A number of fields in three slides were exam-Pus-corpuscles were present in small Many fields contained none. amount. field held eight to ten bunched. Three round cells, apparently from the kidney, were present. One large hyaline and a number of casts of urates were seen; urates and uric acid crystals were numerous.

The third case is in all likelihood one of mulberry calculus.

<sup>\*</sup>Infrequently the urine increased considerably in amount during an attack. Thus, in one twenty-four hours, 85½ fluidounces were passed. On this occasion no solids were eaten, and four quarts of milk were taken.

<sup>†</sup> It was possible always to demonstrate albumin by these coarser tests in the previous specimens.

Miss A. A., first seen August 16, 1891. For four years there had been present stationary pain in the right lumbar region, occasionally accompanied by slight paroxysms, in which the pain darted in the direction of the ureter. The pain was present intermittently at first,

nitric acid.\* It was loaded with calcium oxalate, and microscopic calculi of the same. There were a few pus-corpuscles, red blooddisks, epithelium from the kidney and bladder. Several other specimens were examined microscopically within a short time. Calcium ox-

CASE II.-A. L.

		_					
Date,	Daily amount of urine in fluidounces.	Specific gravity of mixed 24-hour spe- cimen.	Degree of acidity cal- culated on 100 c.c. of urine.	Daily elimination of urea in grains.	Daily elimination of uric acid in grains,	Daily dose of piperazin.	Remarks,
April 15.	28					None taken for 8 days.	Just recovering from an attack; urine dark red; contains much blood, pus, and
April 16.	32	1027	42	436	20	None taken for 9 days.	amorphous urates.  Color high; turbid; no blood macroscopi- cally; few red disks microscopically; pus-cells in large number.
April 17.	49	1022	22	378	Not esti- mated.	None taken for 10 days.	Fac come in single comments
April 18.	68	1021	13	518	Not esti- mated.	None taken for 11 days.	
April 19.	52				Not esti- mated.	None taken for 12 days.	
April 20.	62				Not esti- mated.	None taken for 14 days.	•
April 22.	49	1020	44	423	26	None taken for 15 days.	Slight attack.
April 23.	42	1022	44 48	462	25	None taken for 16 days.	onghi attack.
April 24.	48	1020	30	433	18	None taken for 17 days.	
April 25.	70	1021	18	509	14	None taken for 18 days.	
April 26.	50	1016	16	432	15	25 grains taken.	
April 27.	58	1021	36	493	24	30 grains taken.	
April 28.	44	1022	40	500	181	30 grains taken.	
April 29.		1022	70	382	13	30 grains taken.	Urine contains blood; slight attack; ¾
				l	l		grain morphine taken.
April 30.	37	1022	38	420	15	20 grains taken.	Microscopic examination of urine, pus-, and red-cells; urine still bloody.
May I.	84	1020	20	611	22	20 grains taken.	Attack ceased April 30; urine light color; turbid.
May 2.	76	1020	13	518	26	20 grains taken.	
May 3.	48					30 grains taken.	
May 4.	48					30 grains taken.	1
May 5.	41	1024	48	503	18	30 grains taken.	1
May 6.	43½	1027	48	579	21	30 grains taken.	Pus-corpuscles; renal epithelium, bacteria; uric acid and urates.
May 7.	36	1016	52	475	191	30 grains taken.	Attack coming on.
May 8.	23			••••		30 grains taken.	Preceding this table a report of the micro- scopic examination of this specimen is given.

but had been constant in the past year. About the time this trouble began she had two quite characteristic attacks of renal colic, lasting each a day, and accompanied by bloody urine. She does not know if she then or since passed a stone or gravel. On examination, there was noted an extended area of renal dulness on the right, with decided tenderness on pressure over it. The left loin was normal. There was a systolic apical heart murmur, due to mitral incompetency, probably the result of a past attack of endocarditis during rheumatic fever, which had occurred two years before. The urine was clear, specific gravity 1023, and contained a trace of albumin by overlaying it with

alate crystals were always present in large amount, with a few blood- and pus-corpuscles.†

I concluded the calculus to be of calcium oxalate formation, and therefore scarcely susceptible of solution. I, however, thought it wise to make a thorough trial of a vegetable

<sup>\*</sup> Albumin was examined for a number of times. It was inconstantly present to Heller's test, but always responded to picric acid.

<sup>†</sup> A number of subsequent examinations were made. They all agreed substantially with the above, save that hyaline casts were found several times, and once granular casts, and that, after taking piperazin a week or ten days, calcium oxalate crystals were present in very much less amount.

salt of potassium, as there was, of course, a possibility of the stone being composed of uric acid or urates. Potassium citrate was administered in very full doses for six weeks, totally without result. At the expiration of that time absosolutely no improvement resulting, I had Professor Keen see her, with a view to operation. Professor Keen agreed as to the diagnosis, and advised an early exploratory operation. But to this her consent could not be obtained.

Piperazin was begun in March, 1892. At first it was taken in doses of 9 grains daily, and later in much larger quantities. It was continued until July. Prior to beginning piperazin the amount of urine passed was always subnormal. The gravity was usually high (1030 or over). The daily amount of urea was about 400 grains. It will be seen by the accompany-

thought improvement was occurring. The loinpain diminished and less tenderness existed to pressure. This amelioration, however, was not maintained; and now, as regards the kidney derangement, she is apparently in the condition she was prior to instituting the piperazin treatment. The loin is as tender, the aching as severe, and occasionally darting pains occur from the kidney into the hypogastrium.\*

In the first and second of these cases practically a cure may be said to have been obtained. Undoubtedly a cure has resulted in Case I., as all symptoms referable to the kidney have been absent several months, notwithstanding piperazin was discontinued six months ago. A most interesting fact in this case is the permanent disappearance of gravel from the urine. Gravel had been a persistent and troublesome symptom

CASE III.-MISS A. A.

Date.	Daily amount of urine in fluidounces.	Specific gravity of mixed 24-hour specimen.	Degree of acidity cal- culated in roo c.c. of urine.	Daily elimination of urea in grains.	Daily elimination of uric acid in grains.	Daily dose of piperazin.
April 19. April 10. April 11. April 12. April 13. April 14. April 15. April 17. April 18. April 19. April 20. April 21. May  May  5.	32 27 30 32 40 48 34 27	1033 1033 1034 1030 1033 1026 1023 1025 1032 1027 1032 1035 1030	50 46 43 42 44 34 28 33 54 38 31 46 40 52 52	400 446 349 321 368 381 346 414 454 212 398 480 408 340	152 152 192 142 20 15 15 15 18 15 18 15 15 14	6 days after discontinuance of a daily dose of 9 grains. No piperazin. No piperazin. 24 grains taken. 24 grains taken. 24 grains taken. 20 grains taken. 22 grains taken. 20 grains daily up to May 2; then 30 grains daily to date. 30 grains.
May 6. May 7.	32 37	1032 1022	47 42	350 385	131	30 grains.

ing table that the quantity passed was uninfluenced, and continued small as before. The diminished amount constantly passed may in a measure be accounted for by the fact that the patient habitually partook most sparingly of fluids.

A number of urine examinations were made before taking piperazin and while on the drug. A second series is given in this case, as in that of the case preceding, because the dose first resorted to—9 grains daily—was thought too small to materially influence the amount or quality of the urine. The first series, however, agrees substantially with that of the second.

Piperazin in this case, as regards effects on the symptoms, loin-pain, etc., was most disappointing. No substantial benefit can be said o have resulted from its trial. At first it was for months prior to treatment with piperazin. In the second case, one of undoubted pyelitis, in all probability calculus (uric acid or calcium oxalate), the pus has almost entirely disappeared from the urine. It now manifests its presence only by microscopic examination. None of the former attacks of lumbar pain, of seven years' continuance, have been present for seven months.

In the third case—that of probable mulberry calculus—no benefit has been obtained by the use of piperazin. This is in accordance with what might be anticipated from the behavior

<sup>\*</sup> These were occasionally present when she first presented herself for treatment. They became a trifle more common after piperazin was begun.

of piperazin to this salt of calcium, upon which it has no solvent action.

What is the action of piperazin in cases of nephrolithiasis in which a cure is obtained? The answer seems not far to seek,—by its marked disintegrating effect upon uratic stones lodged in the kidney pelvis, which it bathes in process of elimination. In the test-tube the solvent action of even dilute (one per cent.) solutions of piperazin upon portions of uratic calculi is decided. In a warm chamber, with an equable blood-heat temperature, these are readily softened in a few hours, and this effect is more decided if the solution is permitted to flow slowly over the stone. But if calculi are so dissolved in the kidney, an increase in the uric acid eliminated is to be expected during their disintegration, if a stone of large size is in question.\* This increase, though carefully examined for, was not detected in my cases. It may be that it occurred in Case I., as estimations could not be undertaken for several weeks after piperazin was begun. great improvement in symptoms had occurred. In the second case the doses first used were too minute for this result to be anticipated. The symptoms continuing, the remedy was withdrawn, estimations were made, and larger doses administered. However, no increase in uric acid attributable to the remedy was evident. But also no marked diminution in symptoms of stone occurred while estimations were in process. Distinct amelioration did occur later, while the remedy was being taken in full doses, but when the case ceased to be under continuous observation. In this case the stone, perhaps, being a mixed one of calcium oxalate and uric acid, was more difficult of solution, so that disintegration occurred too gradually to produce early appreciable results.

Our present knowledge of the precise mode of action of piperazin is so limited that little more than theorizing as to the cause of the results obtained can be attempted. That piperazin is beneficial in cases of gravel and stone is certain. Sufficient clinical reports are now on record as to this. Its precise mode of action is still somewhat obscure, and has not been determined by those hitherto investigating the subject, judging from the contradictory statements, all of which are based on narrowed data. Eb-

stein and Sprague † found no alteration in urea or uric acid excretion, but noted an increase in the amount of urine, which, at times, became of an alkaline reaction. Bardet † reported an increase in the soluble urates, while Vogt's experiments showed a diminution in the latter, with an increase in urea. Brik § more recently records Heubach and Kuh's having detected a slight increase in excretion of uric acid, while he himself noted an increase in quantity of urine; but, as with Heubach and Kuh, Brik found no alteration in the reaction, it never becoming alkaline during administration of piperazin.

Extended examinations as to the effect of piperazin on nitrogenous excretion in the urine should be made in both healthy and uratic subjects before accurate judgment can be arrived at as to mode of action. This I had myself undertaken, but was temporarily forced to abandon because of pressure of other work. Uric acid estimations by trustworthy methods are troublesome and consume much time.

In cases of uric acid diathesis other than stone, from what is known of the solvent effects of piperazin on uric acid and the solubility of piperazin urate, an increase in excretion of uric acid might be expected under full doses of piperazin. Yet some observers have reported a diminution, with a corresponding increase in urea, indicating that, besides its affinity for uric acid, piperazin promotes the transformation of uric acid into urea, as do markedly the salts of potassium with the vegetable and carbonic acids. These potassium salts were long ago asserted by Basham to act by virtue of the increased alkalinity of the blood they produce, promoting its oxidation function, and this explanation is now generally accepted. When these salts of potassium are administered, the acidity of the urine is promptly diminished, and soon disappears, while the quantity of uric acid is reduced to a minimum, and that of urea increased often several fold. Piperazin has been asserted to produce identical results on the reaction of the urine, and to also markedly augment urea elimination. I am, however, unaware of any authentic instance of the urine becoming alkaline after the use of piperazin. Perhaps larger

<sup>\*</sup> It should, however, be here stated that a uric acid calculus may be of some size—that of a pea or larger—and yet weigh but a grain or two. Such a stone, requiring several days to disintegrate, would not appreciably affect the amount of uric acid excreted. A very large calculus would, of course, weigh much more; evidence of its prompt solution should then be apparent.

<sup>†</sup> Berl. Klin. Woch., No. 14, 1891.

<sup>‡</sup> Bull. Gen. de Therap., March 8, 1891.

<sup>&</sup>amp; Wien. Med. Blätter, December 10, 1891 (see Therapeutic Gazette, p. 113, February, 1892). Heubach and Kuh's paper appeared in Internat. Centralb. f. d. Physiol. u. Pathol. der Harn u. Sexualorgane. See "Notes on New Remedies," December, 1891. Abstracts of most of the recent literature on piperazin will be found in late issues of the last-named journal.

doses than those usually administered would induce this; 1/2 drachm daily for some days in several of my cases failed to effect this. It may be seen by the foregoing tables that the acidity quantitatively estimated from mixed twentyfour-hour specimens was not appreciably affected by the drug. Nor can it be said that an increase in urea excretion occurred in my three cases, judging from the estimations made immediately before and after giving piperazin. In Case I., during the first five days on piperazin, in which 135 grains were taken, subsequent to its temporary discontinuance there were only 1989 grains of urea excreted against 1603 in the five days preceding, a total increase of but 395 grains. A total increase of 14 fluidounces of urine also occurred. In Case II., 2250 grains of urea were eliminated in the first five days, and 2406 in the second, in which 135 grains of piperazin were taken, a total increase here of but 147 grains. A total diminution in urine occurred in the second five days of 2 fluidounces. In Case III., 1195 grains of urea were passed in the first three days, and 1070 in the second three days (when on piperazin in doses of 24 grains daily), a total diminution in urea of 125 grains. A total diminution in urine also occurred in the second three days of 2 fluidounces. These differences in urea excretion are, of course, too slight and common to be attributed to the administration of piperazin.\* The extraordinary increase in urine in Case I. under piperazin, and the subsequent maintenance of the normal average, is explicable on the probable supposition I have already advanced,—that of the removal of a hydronephrosis by rendering patent a ureter occluded by stone. In the other two cases no increase in urine occurred, which somewhat surprised me, as in several other instances in which I administered piperazin a more or less marked increase is stated to have occurred under it, though no measurements were made.

THE VALUE OF SALOPHEN AS AN ANTI-RHEUMATIC.

By H. A. Hare, M.D.,
Professor of Therapeutics and Materia Medica in the Jefferson
Medical College.

ON the flood-tide of coal-tar products which are now being introduced to the medical profession, with the assertion that each and every one of them is capable of curing almost

every ill to which flesh is heir, the careful physician will be able to discern, among the vast amount of useless material, quite a number of remedies which are really serviceable to him in his daily practice. The writer's object in this article is not to speak of those drugs which have already come into general use because of the wider recognition of their advantages, but rather to give the results which he has obtained with salophen, a remedy which has been before the profession for but a few months. It is not necessary to describe this drug in its chemical relations. Suffice it to state, it is claimed for salophen that it does not possess the poisonous properties which have forced us to employ salol with some care. It will be remembered that salol contains sixty per cent. of salicylic acid and forty per cent. of carbolic acid or By combining salicylic acid with phenol. acetyl-paramido-phenol, we have produced a compound in which the proportion of salicylic acid and innocuous phenol are equal, and which does not possess theoretically if practically the power for harm of that very valuable and widely-used substance, salol. The writer has not employed salophen in large enough doses, or in a sufficient number of cases, to be able to draw practical deductions as to its harmlessness. He can only assert that in the following cases, and in others in which he has employed it, it has given results which are so good that he has added it to the list of remedies which he constantly bears in mind as meeting important indications. Papers have already been published detailing cures by salophen of acute articular rheumatism. With its employment in this disease we are not sufficiently familiar to speak, but of its value in that host of minor ailments closely allied to true rheumatism it has given us the best results.

In the case of a woman, aged sixty-five, who was very stout and plethoric, and who suffered from severe sciatic neuralgia, associated with some myalgia, and muscular stiffness in other parts of the body, salophen alone, or combined in equal parts with phenacetin, gave results which the older compound, salol, failed to produce. It did not disorder the stomach, there was no difficulty in giving it in pill form, and the rapidity of its action was highly agreeable to physician and patient.

In another case, a man suffered from a severe and prolonged attack of rheumatic neuritis, involving the brachial plexus, which forced him to leave the city and to take a holiday of several weeks. This, however, produced no benefit, but salophen, in full doses,—10 or 20 grains three times a day,—caused entire relief

<sup>\*</sup> In two similar periods of five consecutive days, when on no drug, a difference in the amount of urea excreted in my own urine amounted to 250 grains.

of the symptoms very rapidly. He had taken, before salophen was given to him, most of the antirheumatic remedies, and had used local applications without any benefit. It is only fair, however, to state that, while the salophen was given, antirheumatic treatment, so far as diet and exposure was concerned, was carefully carried out. On the other hand, similar precautionary measures had attended the administration of the antirheumatic remedies which he had taken early in the attack.

In a third case, that of a middle-aged man, with a distinct tendency to uricæmia, which manifested itself by fleeting neuralgic attacks in different portions of his body, by attacks of rheumatism in isolated muscles, and by neuralgia of the spermatic cord and testicle, salophen, in the dose of 10 grains three times a day, proved very serviceable.

In the fourth case, a woman presented the following history: Her age was sixty-two; she had enjoyed perfect health until the last four or five years, when she was attacked by frequent headaches, which sometimes occurred as frequently as every forty-eight hours. These headaches were associated with middle-ear disease, largely dependent upon a gouty or rheumatic diathesis. The attacks of headache were so severe that they produced much nausea and gastric distress. times there were hyperæsthetic spots in the scalp, which were so tender that combing or brushing the hair became painful. The digestion was in fairly good condition, except that there appeared to be an undue tendency to gastric and intestinal fermentation. of one of the diuretic mineral waters taken freely half-way between and before meals, and the employment of 10 grains of salophen four times a day in pill form, gave very extraordinary relief, so that the patient considered herself practically entirely relieved. In this case the stoppage of the drug for a few days, associated with a severe nervous shock and moving from one residence to another, caused a temporary relapse, but careful attention to diet and the renewed administration of salophen once more produced favorable results.

One point in regard to the administration of antirheumatic remedies should always be remembered. Those who have treated rheumatic conditions to any extent must have noticed very frequently that the disease most persistently resists all medication, and then suddenly improves when medication has ceased or when some comparatively feeble remedy is administered; in other words, rheumatism and its allied conditions, which are more and more

frequently seen, particularly in city life, present a picture which is capable of so many changes that the physician who studies the action of drugs under these circumstances must always be on his guard, lest coincidence be confounded with therapeutic efficiency. positive conclusions should be reached in regard to this class of remedies, either for or against them, unless the benefits derived are most noteworthy and are repeated with sufficient constancy to indicate very strongly that the drug is responsible for the change in the This article is open to aspect of the case. these doubts from the stand-point of scientific accuracy in observation, but the results have at least encouraged the writer to use the drug with confidence.

The question whether salophen will prove as valuable as has its sister salol in the treatment of many various conditions, more particularly intestinal disorders, while answered affirmatively in theory, can only be decided practically by its free employment in such conditions.

#### POISONING BY SULPHATE OF STRYCH-NINE.

In the *British Medical Journal* for August 21, 1892, Drs. Wallace and McRae report the case of a man who swallowed no less than twenty grains of powdered sulphate of strychnine in an attempt at suicide.

The patient was sixty-five years of age. The physicians arrived at his bedside between seven and ten minutes after the ingestion of the drug, and at once administered one-fifth of a grain of apomorphine hypodermically; six tumblers of hot water, with three tablespoonfuls of mustard, and three tablespoonfuls of salt, by the mouth, for the purpose of producing vomiting.

These remedies acted promptly, and after their action a stomach-pump was used to repeatedly wash out the stomach. Three ounces of tannic acid were administered as an antidote, and, finally, a large dose of bromide of potassium and chloral was given. The patient escaped with nothing more than twitchings and jerkings of the muscles of the limbs, and tetanic spasms of the muscles of the lower jaws, with violent contractions of the œsophagus.

They attribute his recovery after this enormous dose of strychnine, first, to the short space of time which elapsed before treatment was instituted; and, second, to the very efficacious and rational method adopted to remove the strychnine from the stomach and to prevent that which had been absorbed from acting too suddenly upon the nervous system.

#### The Therapeutic Gazette

EDITED BY
H. A. HARE, M.D.,
GENERAL THERAPEUTICS.

With special departments under the charge of G. E. DE SCHWEINITZ, M.D., OPHTHALMIC AND AURAL THERAPEUTICS, AND

EDWARD MARTIN, M.D., SURGICAL AND GENITO-URINARY THERAPEUTICS,

#### GEO. S. DAVIS,

Medical Publisher, Box 470,
DETROIT, MICH.

Philadelphia, 714 Filbert Street

SUBSCRIPTION RATES FOR 1893.

THERAPEUTIC GAZETTE (postage included).....\$2.00 THERAPEUTIC GAZETTE with MEDICAL AGE...... 2.50 THERAPEUTIC GAZETTE with WESTERN MEDICAL

REPORTER...... 2.50
THERAPEUTIC GAZETTE with BULLETIN OF PHAR-

MACY...... 2.50

THERAPEUTIC GAZETTE with AMERICAN LANCET 3.25 THERAPEUTIC GAZETTE with AGE and LANCET... 4.00

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136 Gower Street, London. Price 208. Remittances may be made either by Postal Order or Stamps.

Price to Foreign Subscribers direct (postage included), \$2.50 (10 shillings). English postage-stamps received on remittances.

Editorial communications should be addressed 222 South Fifteenth Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

Authors will receive reprints in pamphlet form, without charge, provided the request for them be written on the articles sent.

Business communications should be addressed to the Publishers.

#### Leading Articles.

#### THE INFLUENCE OF CALOMEL ON THE FLOW OF BILE.

If there is one point firmly fixed in the minds of the average practitioner of medicine it is that the mild chloride of mercury increases the quantity of bile in the intestine. If such a believer is questioned as to whether this increased amount of biliary fluid is due to a true increase in secretion, or simply to an increase in the flow of bile from the gall-bladder, he will either state that he is unable to answer the question, or that he believes that it is an increased secretion.

Practically the position of the profession in general in regard to the purgative influence of calomel is that the drug exercises a stimulating effect upon the biliary gland. Careful experimentation upon the lower animals by several competent observers, and careful studies made

by physiological chemists, fail, however, to give us very much light upon this subject. It is held by some that calomel never acts as calomel, but is converted by the hydrochloric acid of the gastric juice into corrosive sublimate, and that this drug then stimulates the liver to increased activity.

On the other hand, the best chemical investigations show positively that the feeble acidity of the gastric juice and the temperature to which the calomel is exposed are not favorable to the conversion of a sufficient quantity of calomel into corrosive sublimate to account for any hepatic influence. Thus, it was found by Rutherford and Vignal, in their well-known series of studies upon the influence of drugs upon the secretion of bile, that if five grains of calomel are subjected, at 100° F., for seventeen hours, to the action of normal gastric juice, not more than one-thirty-fifth of a grain of mercuric chloride is produced. As calomel does not remain in the human stomach for more than a night at the utmost, and generally but a very few hours, it is not likely that as much as a thirty-fifth of a grain of mercuric chloride is produced from the moderately large dose of five grains.

In contradiction of this, Bucheim, Winkler, and others assert that no conversion whatever takes place at the temperature of the body, and Jaennel's later studies support this view.

The other theory as to the change which takes place in calomel prior to its action upon the liver is that it escapes into the intestine, where it is decomposed and the gray oxide of mercury precipitated, which may, however, be held in solution by any fatty materials, which, being mixed with alkaline liquids, practically form soaps. It is thought by Wood and others that this is the more probable result, particularly in view of the fact that calomel acts more like blue mass than corrosive sublimate. than this, these opinions are confirmed by the fact, with which all of us are familiar, that the hepatic influence of calomel is much more positively asserted if at the same time small doses of the bicarbonate of sodium are administered. Under these circumstances the bicarbonate of sodium naturally diminishes, to some extent at least, the acidity of the gastric contents, and also directly or indirectly tends to increase the alkalinity of the contents of the duodenum.

As if to increase the complexity of the problem, the studies of Rutherford and Vignal seem to prove conclusively that in the dog, at least, mercuric chloride has a direct stimulant effect upon the hepatic cells; whereas, calomel, while producing purgation by increasing the secretion of the intestinal glands, in no way increases the true secretion of bile; and this would seem to indicate that, after all the influence of calomel upon the liver is due to a very minute portion of it being changed into corrosive sublimate. Probably the truth of the matter is that we have as yet no definite scientific explanation of how calomel really does act. It may be that the solution of the problem lies in the hepatic influence exercised by the presence of minute quantities of corrosive sublimate, and the purgative effect produced by that portion of the calomel which has not been converted into the strong chloride of mercury. This is rendered the more likely in view of the fact that the corrosive sublimate has been found a feeble intestinal stimulant, while the calomel has been found to produce active purgation in dogs without producing an increase in biliary flow when the drug has been introduced into the duodenum.

It has been suggested, too, that calomel itself may stimulate the bile-expelling mechanism, while the minute portion of corrosive sublimate increases the secretion of the liquid; and, again, that, by means of the purgative effect that it produces, certain substances which have been in the intestine are immediately removed, and, as a consequence, a depressant influence upon the hepatic cells no longer exists.

While at first sight the argument seems a forcible one, that a vast clinical experience in regard to calomel is far superior to any series of experiments on dogs, it is only just to remember that in the entire series of remedies supposed to produce an hepatic effect, calomel is the only one which failed to influence the liver of the dog as the others influenced the liver of man.

It is to be hoped that those physicians who have opportunities to examine persons suffering from biliary fistula will take the opportunity, whenever it arises, of watching the influence of calomel upon the flow of bile from the fistulous opening.

This subject also is of interest to the practical physician in relation to the administration of calomel in compressed tablets or other preparations when mixed with what might be called excipients. Under these circumstances, if one of the excipients is bicarbonate of sodium, the tablet almost always undergoes a change, and becomes of a gray color. Those who have used pills or tablets of calomel which have been kept for a long period of time seem to be universally in accord with the statement that they have lost the hepatic effect which a recently-prepared

powder always possesses. Thus it has been frequently found that no biliary flow occurs under the use of stale tablets; whereas, free bilious purging follows the administration of freshly-prepared powders.

# THE TREATMENT OF HYPOPYON KERATITIS.

HE term purulent keratitis describes in a general way the forms of inflammation of the cornea associated with the development of pus, either within the layers of the cornea or in the anterior chamber. It is typified by the disease which has been variously called abscess of the cornea, hypopyon keratitis, and serpiginous or creeping ulcer. The serious nature of the affection, the scarring of the cornea which practically always follows it, the disfiguring staphylomatous protrusion which may ensue, and the actual blindness which are only too frequently the result of it, furnish sufficient reasons for the most attentive treatment, and if any new method, or new method of applying old measures, gives evidence of producing better results than those which have been previously employed, we necessarily turn to it. For this reason the paper of Fukala (Berliner Klinische Wochenschrift, December 5, 1892), entitled "A New Method of treating Abscess of the Cornea," is worthy of review.

Two evident indications for the treatment of abscess of the cornea are to prevent the bulging of this structure at the point of the lesion and to evacuate the pus, either from the layers of the cornea or from the anterior chamber, or from both places. The tendency to protrusion of the affected tissue is brought about partly by the fact that the walls no longer resist the intraocular tension so well as they did before they were attacked with the disease, and partly by the fact that the pus burrows, or at least spreads, in the lamellæ of the cornea and lifts them from the surrounding more healthy tissue. very much as the same process takes place in an abscess in the subcutaneous tissue where the gradual accumulation of pus and its infiltration along the lines of least resistance raise the superficial tissues above their surrounding level. With these two indications in view, and influenced by the facts which have just been recited, Fukala believes that the treatment of hypopyon keratitis, or, as he calls it, abscess of the cornea, should consist in methods which are calculated to change the entire abscess into an open ulceration, to which the stimulus to cicatrization has been given.

This he accomplished in the following manner: The conjunctival cul-de-sac is carefully irrigated with a 1 to 5000 sublimate solution, after the eye has been rendered anæsthetic with a few drops of a five-per-cent. solution of hydrochlorate of cocaine. The superficial portion of the lesion is seized with a pair of fine forceps (iris forceps), and removed by means of the iris scissors. Very often the forceps are unnecessary, the scissors being all-sufficient. The important point is that all of the necrotic tissue shall be removed to the extreme periphery of the lesion in its entire circumference. Afterwards the open wound is sprinkled with the sublimate lotion, atropine is instilled, and a pressure bandage is applied. The open wound which results from this procedure, according to the author, is speedily cicatrized by the process of granulation. In the cases which are quoted in support of this, two in number, the result appears to have been prompt and satis-

It is difficult to understand why the author of this paper refers to the method which he employs as a new one, as the removal of necrotic tissue from a sloughing ulcer of the cornea by some means or other, although perhaps not necessarily with an iris forceps and iris scissors, is a very well recognized surgical procedure. It serves, however, as an introduction to what are the best means of treating these serious forms of corneal ulceration. Saemisch's section, once so popular and, when successfully performed, capable of yielding the very best results, has not found in recent times the favor which it once enjoyed, largely, perhaps, because other methods-for example, the actual cautery-have secured equally good results, and have been unattended with many of the dangers which encompass it, chief among which is prolapse of the iris into the lips of the wound. It would be useless to urge at this late date the claims of the actual cautery in the treatment of infective corneal ulceration. These are so well established as to require no further commendation; and Fukala, impressed with the value of his own method of treating this disease, brings forward as its chief endorsement that in his hands it has yielded as good results as has the actual cautery.

There are, however, cases in which a very large ulcer is associated with a hypopyon that nearly fills the anterior chamber, and in which it can be demonstrated that the collection is exceedingly tenacious, having assumed the character of a slough. Under these circum-

stances there is a strong indication for Saemisch's section, or, at least, for a section which in some way makes it possible to reach the material in the anterior chamber with forceps, or to afford a point of entrance for the tip of a delicate syringe, with which the anterior chamber may be irrigated. As Gruening long ago pointed out, it is not unlikely that in these cases a combination of Saemisch's section and the actual cautery is preferable, because the latter destroys the septic material of the cornea and the former removes septic material from the anterior chamber.

The comparative value of incision and the galvano-cautery, as given in a table compiled by Nieden, is as follows: In 113 cases of incision there were 9.7 per cent. cases of phthisis bulbi, 26.5 per cent. of leucoma adherens, 61 per cent. of macula, and 3.5 per cent. with unknown result; while in 100 cases treated with the galvano-cautery there was 0 per cent. of phthisis, 3 per cent. of adherent leucoma, 9 per cent. of leucoma, and 88 per cent. of macula. It is, however, very difficult to obtain accurate comparative statistics on this point, and the treatment of each case must be governed by the existing conditions and cannot be decided on statistical information.

So far as Fukala's recommendation to remove the necrotic tissue and to convert the abscess into an open ulcer is concerned, it may be said that, independently of the fact that this method, or one analogous to it, is well known and often practised, there is reason to fear that resulting scar may be more extensive than that which is caused by some other procedures. One of the objections urged against the galvano-cautery is the fear that it may lead to a very firm and extensive cicatrix. This objection does not seem to be well founded, and as Fuchs has stated, and as it has often been shown since, the opacity is not greater after the actual cautery has been used, provided it is applied properly and only within the area of necrotic tissue, than if it had not been The small circumscribed abscesses of the cornea, which really, by virtue of the fact that the superficial epithelium has not broken, belong rather to the non-ulcerated lesions of the cornea, are very well treated by cutting with a delicate knife the superficial layers, and thus evacuating the pus, as is especially urged in a paper by Hansell; or, after incision of the superficial layers, the necrotic tissue may be touched with the point of a galvano-cautery or scraped away with a small curette, converting them, as Fukala would do with the larger ones, into an open ulcer.

After the ulcer has been thoroughly broken down by scraping its margins, the surface may be cauterized with a two-per-cent. solution of nitrate of silver, which, in the opinion of many surgeons,-Berry, for instance,-is quite as efficacious as any other method. Fukala, after his operation, recommends sprinkling the surface of the ulcer with sublimate lotion; no doubt a very excellent precaution, and one tending to stimulate healing; but, on the whole, iodoform is the preferable drug. It is well borne by the cornea, has a distinct anæsthetic action, and in corneal tissue probably encourages the healing by granulation. The iodoform treatment alone, however, is hardly sufficient, and although the drug holds a justly high place in the treatment of corneal ulceration of the sloughing type, it has a good many failures to its credit, and statistics show that from six to seven per cent. of shrunken eyeballs have resulted from depending alone upon the iodoform treatment of infective corneal ulcers.

It should not be forgotten that many of the cases of moderate hypopyon keratitis do remarkably well without operative interference. Atropine or eserine, according to the indications, hot compresses, a compressing bandage, and irrigation of the lachrymal sac constitute measures which have yielded abundant successes; in fact, one of the chief difficulties of telling exactly what is the most valuable form of treatment in any one particular type of corneal ulceration is, that it is so rare to employ the various measures unassociated; thus, the author whom we have several times quoted, practising the very rational and quite common procedure of removing the necrotic tissue in order to convert the slough into an open and healthy sore, follows his treatment by sublimate lotion, atropine, and a compressing bandage, and is rejoiced to find, in one instance at least, the disappearance of a small hypopyon in the course of twenty-four hours, a result which might have ensued without the operative interference. This combining of methods of treatment has been one of the chief difficulties in exactly determining the value of eserine in corneal ulceration. The myotic has been used with very good results, and in recent times it has seemed with better results than those obtained from mydriatics, but it has almost always been employed in association with other methods of treatment: hot compresses, bandages, antiseptic fluids, bracing constitutional treatment, and rest in bed.

The summary of the matter, so far as surgical procedures are concerned, would seem to be somewhat as follows: The actual cautery in

medium-sized serpetic ulcers of the cornea with moderate degrees of hypopyon; Saemisch's section, or a modification of this, in large infective ulcers with extensive hypopyon, composed of tenacious material resembling a slough: a combination of the galvano-cautery and corneal section in types of extensive ulceration and tenacious hypopyon, where there has been a particular tendency for the ulcer to spread and to resist treatment; some form of operation which removes the necrotic tissue in circumscribed abscesses of the cornea, or in small abscesses which have burst superficially and are beginning to infiltrate the lamella of the cornea; and, finally, in any form of infective ulcer of the cornea, after removal of sloughing tissue by any of the recognized means, the direct application to the lesion of an antiseptic, and experience seems to show that iodoform is the one most generally applicable. In all of the instances quoted, if there is no contraindication, the compressing bandage assists in the cure, and, indeed, very likely is responsible for a great deal of it.

THE TREATMENT OF FISSURES AT THE NECK OF THE FEMALE BLADDER.

As a complication of chronic cystitis, or, indeed, in many cases when the mucous membrane of the bladder is as a whole quite healthy, there is found at the neck of the bladder an area of intense local congestion, frequently associated with abrasions and fissures. This is usually dependent upon an antecedent gonorrhoea, and is in many respects similar in pathology and symptomatology to the posterior urethritis of the male. Its true nature is generally not recognized; its symptoms are grouped with those dependent upon cystitis, and recovery is usually little hastened by the internal treatment, upon which reliance is placed.

This localized inflammation is characterized by frequency of micturition, at times accompanied with severe tenesmus, especially after exposure to cold, or indulgence in alcoholic or sexual excesses. These symptoms are allayed, or even entirely relieved, by rest in bed. At the times when they are most severe there is usually some blood passed, generally no more than a few drops, which appear immediately after micturition. Sometimes the bleeding is so frequently repeated and persistent that the patient is rendered distinctly anæmic. On examination per vaginam during these periods of

exacerbation, a tender spot can often be found near the neck of the bladder.

A positive diagnosis can be made by an examination with the speculum. The thickened, congested, and often fissured mucous membrane at the neck of the bladder offers a full explanation for the symptoms which have not infrequently been mistaken for those due to a tumor or a foreign body. In some cases various reflexes are excited, and a condition of neurasthenia is produced very similar to the sexual neurasthenia constantly observed in males who are the subjects of chronic posterior urethritis.

The results of direct treatment are in these cases highly satisfactory. The urine must be rendered bland, slightly antiseptic, and, where the symptoms are not too acute, mildly stimulating. This end is accomplished by careful regulation of the diet, the administration of alkaline diuretics, and the cautious use of salol, boric acid, and oil of sandal-wood. Salol and boric acid are administered in 5-grain doses four times a day. Of all the aromatics, oil of sandal-wood gives the best results in this form of inflammation. It should be given in 10- to 20-minim doses one hour after meals, since thus administered it is less likely to disturb the stomach. None of these remedies can accomplish sufficient good to compensate for the damage incident to marked disturbance of digestion, since the effect to be produced is, after all, only of secondary importance. Should any dyspeptic symptoms appear, ingestion of these remedies must be stopped.

The direct treatment is that upon which reliance must be mainly placed, and will usually promptly cure. Where there is violent tenesmus, temporary relief may be obtained by the instillation of a few drops of a four-per-cent. solution of cocaine into the deepest part of the urethra. The urethra is first gently dilated either by means of short, cylindrical sounds, or by a urethral dilator. The diseased area is exposed by means of a urethral speculum (and for this purpose Skene's pattern is eminently satisfactory), and should be touched at intervals of two to three days with strong solutions of nitrate of silver, 20 to 60 grains to the There should be a daily irrigation of the urethra with a mild antiseptic solution, preferably permanganate of potassium (1 to 6000), permanganate of zinc in the same strength, or bichloride of mercury (1 to 10,000). This irrigation is best accomplished by attaching a small soft catheter to a fountain-syringe filled with the hot solution which has been selected for the flushing, lubricating the soft catheter with glycerin, introducing it into the bladder, starting the stream from the fountain-syringe, and slowly withdrawing the catheter. In some cases, for direct application, sulphate of copper (ten to twenty per cent.) solution, or carbolic acid and iodine, equal parts of each, will be found more serviceable than nitrate of silver. In gonorrheal cases, however, and these will include the great majority of all these cases, the silver is generally the most serviceable. The strong solutions are, of course, always applied by means of cotton on a holder.

### PENTAL AS AN ANÆSTHETIC.

THIS drug, which since the year 1856 has had a limited use as an anæsthetic, has recently been warmly recommended, because of certain advantages which it seemed to possess over both chloroform and ether. But a small quantity (for a period of half an hour, from half an ounce to an ounce and a half) is required to anæsthetize; the full effect is produced in less than two minutes, the period of excitement is very brief, there is little or no interference with the respiratory functions, the effects of the drug rapidly pass off, and, as a rule, neither headaches, vomiting, nor any other disagreeable symptoms follow. thesia may be obtained without loss of consciousness or pupil reflex.

Though this drug possesses marked advantages, the fact that it has produced one death in a limited number of administrations (one thousand) has prevented conservative surgeons from giving it a trial, though the fact was clearly recognized that the single fatality might have occurred quite independently of any lethal influence of pental. however, there has appeared a research by Kleindienst, which, if corroborated by others, should definitely settle the position of pental as an anæsthetic. Kleindienst found in a large percentage of cases (eight out of twentyfive) that the administration of this drug was followed by the appearance of albumin in the urine, supplemented by blood and casts in some cases.

With this record against the pental (one death in one thousand administrations and involvement of the kidneys in thirty-three per cent. of cases), we must look to Germany for corroboration or disproof of the statements of Kleindienst, since human life is regarded by the English and American surgeons as too valuable to risk in such a research.

# Reports on Therapeutic Progress.

# THE EFFECTS OF THE IODIDES ON ARTERIAL TENSION AND THE EXCRETION OF URATES.

HAIG, at a meeting of the Royal Medical and Chirurgical Society, on Tuesday, December 13, 1892, referred to an article of his in vol. Ixxi. of the *Transactions* on drugs which diminish the excretion of urates. The list of substances which have this action has now been greatly enlarged, and he believes that the iodides must be added to it. He also believes that the action of these substances on the solubility and excretion of urates will explain a large part of their value and utility in medicine and surgery, just as he has previously said elsewhere with regard to opium and mercury, which act in the same way.

He was at first misled by his results with the iodides, and was further hindered by their affecting the process which he has used for the estimation of uric acid (Haycraft's). These difficulties were, however, overcome, and, with greater knowledge and experience of the working of certain laws which govern the excretion of urates and of water, he now believes that it is possible to speak more decidedly as to the action of iodides.

One of these laws is that first formulated by the writer at the beginning of 1889 (British Medical Journal, vol. i. 291), "that, cateris paribus, arterial tension varies with the uric acid that is circulating in the blood." Another is that from day to day and from hour to hour, in physiological conditions, the urinary water varies inversely as the uric acid excreted along with it. Another is that in physiological conditions the excretion of urates in the urine varies inversely as the acidity of the urine. And another, that the amount of urate in the urine is, relatively to the urea, to a certain extent an index of the amount of urate passing through the blood.

From these it follows that arterial tension varies with the amount of uric acid that is being excreted in the urine. But arterial tension means contracted arterioles, and contracted arterioles mean that water has difficulty in passing the kidneys, as is shown to be the case in the parallel action of digitalis and other drugs which contract the arterioles, and this is the reason why the urinary water varies inversely as the uric acid (see book on "Uric Acid," by Haig, p. 100).

The diuretic action of iodides is well known, and the writer shows four figures which demon-

strate that at the time an iodide is causing diuresis it is also causing a diminished excretion of urate, and that the one thing is related to the other as cause and effect.

The figures also show well the inverse relation of urates and water in excretion; also that under the influence of iodides the excretion of urate ceases for a time to bear its usual inverse relation to acidity.

But the writer points out that some twenty drugs, or rather groups of drugs, all diminish the excretion of uric acid in the urine, and at the time they do this produce also relaxed arterioles, lowered arterial tension, and diuresis.

Then iodides can be classed along with these drugs, and as the latter can further be broken up into three groups, according to the way in which they produce the diminished excretion of uric acid, it may be possible to say which of the groups the iodides most resemble in their mode of action.

He points out how this action of iodides on the solubility of urates, and so on the contraction of arterioles, enables us to explain all their most important effects in physiology and pathology, just as he has previously pointed out in the case of opium and mercury.

Lastly, he refers to his previous writings on uric acid as a cause of high arterial tension, and suggests that there is no possible explanation of the parallel action of all these drugs except that which he has given,—namely, that urates contract the arterioles all over the body, and raise arterial tension, while their absence from the blood-stream, however produced, allows these vessels to dilate.

The action of iodides on arterial tension is thus completely explained by their influence on the solubility and excretion of urates.—Abstract.

# WINE OF IPECACUANHA FOR INEFFI-CIENT LABOR-PAINS.

DR. H. STILLMARK reports a confinement case in which he made most successful trial of wine of ipecacuanha, which Draper commends for producing, after two or three doses of 10 to 15 drops, energetic labor-pains.

The patient was twenty-three years old, and had borne three children, the last one supposably prematurely, as the child died soon after birth. All three births had occurred quickly and easily. Her last menstruation was July 10, 1891. On March 22, or about three weeks before the presumptive termination of her time, without any known cause, the membranes ruptured, accompanied by one or two feeble pains. Stillmark was called to the patient at five o'clock

in the morning of March 23. The examination made at once showed a cranial presentation, the head in the pelvis; the mouth of the womb dilated to the breadth of two or three fingers; fœtal heart-beat, 140; no pains present; liquor amnii trickled constantly from the vagina. At ten o'clock the patient was bathed. As there were no pains up to two o'clock in the afternoon, numerous warm vaginal douches were applied, but in vain. The fœtal heart-beats continued normal; the condition of the patient was excellent. She slept during the following night. On the morning of the 24th, after the patient had been again bathed, warm douches were again used, the uterus given gentle massage, and hot applications made to the body. As none of these measures produced the desired result, and the patient was feeling exhausted from the long excitement, Dr. Stillmark decided to try the wine of ipecacuanha. noon the patient was given 15 drops. After half an hour the patient said that her "belly suddenly became hard." At half-past two, 15 drops were again given. About three-quarters of an hour after the second dose, strong normal pains began. At four o'clock repeated vomiting occurred. As the pains became feebler towards evening, and almost ceased at ten o'clock, the dose was again given; this time, on account of the nausea, only 5 drops were given. Again the action was prompt. In consequence of the renewed energy of the pains, the child was born unasphyxiated at midnight. The labor was dry. Spontaneous expulsion of the placenta occurred; the puerperium was normal.

Of course this was only one case; but, on account of the absolute lack of pains, it speaks well for the power of the wine of ipecacuanha to produce normal pains and normal—not tetanic—contraction of the uterus.—St. Petersburger Med. Wochenschrift, May, 1892.

### METABOLISM IN ACUTE PHOSPHORUS-POISONING.

The works of Schmiedeberg and his pupils seem to make it certain that urea is formed from carbolic acid and ammonia, and the careful investigations of Schröder show that this union takes place in the liver. Whether this organ is the only portion of the organism where the formation of urea occurs, and whether all urea is formed in the above manner, remains to be proved. Wishing to establish some new facts in regard to the position of the liver in the metabolism of nitrogen, Dr. E. Münzer (Centralblatt für Klinische Medicin, June 18, 1892)

made careful observation of all cases of phosphorus-poisoning coming into his clinic during the past year. There were eight cases, six of them fatal.

Acute phosphorus-poisoning in man takes the same course as that of animals. Death may occur in a very short time from paralysis of the heart. During this time, owing to the general and great depression of the organism, the metabolism of nitrogen is diminished, and the patient passes less nitrogen through the urine than a man in a starving condition.

Parallel with the decrease of the whole amount of nitrogen given off, the quantity of urea passed is also very small, although in comparison with the whole loss of nitrogen, the urea given off in this stage need not be lessened, and may form ninety-one per cent. of the whole amount of nitrogen.

If the patient survives this stage, the injurious action of the phosphorus upon the organic albumin appears, causing an increased and abnormal decomposition of albumin. The whole amount of nitrogen given off increases rapidly, and reaches, especially considering the starved condition of the persons poisoned, an abnormally large quantity,-two and a half, three and a half, four and a half drachms for the day. How is this nitrogen divided in its component parts? First of all, the urea nitrogen appears to be lessened by seventy to eighty per cent., and the ammonia nitrogen much increased.—ten to eighteen per cent. Does this indicate the formation of urea in the liver? And is the increased NH, given off the result solely of the diseased liver and its lessened synthetic function? Dr. Münzer thinks that cannot be claimed. It must not be forgotten that the investigations of phosphorus-poisoning by H. Meyer established an abnormal development of acid products of metabolism and a lessening of the alkalescence of the blood. The abnormal acid products which occur here -sarcolactic acid, etc.-are neutralized by the ammonia of the organism.

He thinks the following gives considerable ground for the belief that we only have to do in these cases with acid-neutralizing ammonia:

The dog is known to be an animal which is unable to produce any acid-neutralizing ammonia, and hence in the experimental introduction of acids is destroyed by the withdrawal of fixed alkalies from the blood. Hence, after poisoning with phosphorus, there should be, in consequence of the diseased liver, an increase of ammonia in the urine, if the increased loss of ammonia in man is due to the diminished synthesis of NH, and of CO, in the urea. Two

experiments gave absolutely negative results, although the animals died from the poison; although the urine found in the bladder gave a marked acid reaction, and the liver had become entirely fatty, there was no increase of NH, in the urine.

Dr. Münzer believes that the increase of ammonia found in persons poisoned with phosphorus is caused by an abnormal production of acids in the organism. As to the condition of the blood, the decreased alkalescence of the blood may be explained in the destruction of red blood-cells, which is considered by most authors one of the results of phosphorus-poisoning.

O. Taussig thinks he can show from his investigations that there is no destruction of the red blood-cells in man following phosphorus-poisoning, although there is a rapid destruction of them in hens. The cause of the abnormal acidity in man after phosphorus-poisoning must be sought in the abnormal metabolism of the individual organic cells.

THE INFLUENCE OF THEOBROMINE, CAF-FEINE, AND A FEW SUBSTANCES BELONGING TO THIS GROUP UPON THE ARTERIAL BLOOD-PRESSURE.

W. Cohnstein reaches the following conclusions:

- 1. An increase of the blood-pressure following the use of theobromine cannot be detected.
- 2. No constant influence upon the frequency of the pulse could be noted.
- 3. No influence upon the energy of the cardiac contractions (shown by a change in the height of the pulse-wave) could ever be observed.
- 4. After very large doses there was finally a gradual sinking of the pressure, occasionally also a lessening of the pulse frequency.
- 5. Theobromine in physiological doses has no perceptible action upon the heart and vascular system of mammals.

The direct improvement of the heart action and pulse, which some have ascribed to theobromine, occurs only secondarily, as the result of freeing the organism of harmful fluids by means of the diuresis brought about by the theobromine.

As for caffeine, Cohnstein agrees with most observers in holding that—I, in small doses it produces an increase of the arterial blood-pressure, while larger doses prevent this increase; 2, that the influence upon the blood-

pressure is the result of the changed condition of irritability of the vaso-motor centre caused by the caffeine; 3, caffeine has a direct action on the heart, showing itself in the pulse frequency and wave height, first as an irritation and then as a paralysis; 4, the heart-muscle is affected by caffeine in precisely the same manner as the skeletal muscle; 5, the action of caffeine upon the heart-muscle differs from that of helleboreine of the digitalis group.

Ethyltheobromine kills warm-blooded animals with partly clonic and partly tonic convulsions proceeding from the brain, the occurrence of which can be prevented by the use of artificial respiration. Under toxic doses the blood-pressure sinks gradually. Death follows with symptoms of paralysis of the spinal cord and the medulla oblongata.

Ethoxycaffeine showed no action upon the blood-pressure.

Phenoxycaffeine and methylcaffeinehydroxyd reduced the blood-pressure slightly, the pulse decreased in frequency, and the height of the pulse-wave increased from four to five times the normal.—Schmidt's Jahrbücher, No. 6, 1892.

# QUICKSILVER VAPOR FROM MERCURIAL OINTMENT.

In spite of the investigations of Reuk, Kun-KEL (Sitzungs-Berichte der Physikalisch-Medicinischen Gesellschaft zu Würzburg, No. 2, 1892) has found it hard to understand how any great amount of quicksilver could be scattered in dust, or be given off from the gray salve in the form of vapor. The salve consists of fat enveloping the droplets of quicksilver. Kunkel tried a new experiment to test this. He prepared a box, the surface area of which was known to him, and smeared it with a certain amount of the salve, and then passed air slowly through it, the box receiving the air on its exit in an absorbing apparatus, so that the quicksilver could be collected and measured. This exceedingly delicate experiment was most carefully performed, and the result showed that quicksilver is given off in vapor from the mercurial ointment. Therefore it can be breathed by the patient who has occasion to use the salve. Just how great a quantity he would breathe is difficult to determine. But it is important to note that, while "dust" remains in the respiratory passages and is reabsorbed, vapor like air would be, at least in part, given off again; so the danger of poisoning through vapor is much less.

SALOPHEN AND ITS THERAPEUTIC USE.

DR. JOSEF FRÖHLICH (Wiener Medicinische Wochenschrift, Nos. 27 and 28) writes of his trial of salophen. He used it in thirty cases, and finds it a rapidly-acting remedy for acute He finds its action articular rheumatism. equally as good as that of either sodium salicylate or salol, while it is preferable to them because it is not hygroscopic, and can be used In further contrast to the in every form. above-named remedies, it has no taste; and, finally, most important of all, even when given in large doses for a long time, it produces none of the unpleasant results of the other two. Neither loss of appetite, nausea, vomiting, dizziness, buzzing in the ears, nor occasional conditions of collapse follow its use. It is decomposed in the intestine, and therefore any action upon the stomach is prevented. In all his thirty cases Fröhlich did not observe any stomach trouble, and only three times were there temporary cerebral symptoms. Its action upon the six cases of chronic articular rheumatism was not uniform. In the first case it was good, but in three following ones it availed nothing.

As an antipyretic, salophen in every dose and every form of administration, was entirely without action.

### POISONING BY CARBOLIC ACID.

BARRATT reports in the British Medical Journal for August 27, 1892, the following case:

C. W., a rickety child, aged four years, swallowed at the Birmingham Workhouse Infirmary a quantity of carbolic lotion containing one hundred and eighty grains of carbolic acid. child, when discovered, was lying unconscious on the floor. It was at once given some salt and water; this was swallowed, and shortly afterwards some of the contents of the stomach were vomited, and the child showed signs of returning consciousness. It soon relapsed, however, and a quarter of an hour later was completely comatose, with dilated pupils, insensitive corneæ, and a barely perceptible pulse at the wrist. The circulation was kept up with hypodermic and rectal injections of brandy. while the stomach was washed out with three pints of tepid water, one ounce of olive oil being subsequently injected. The pulse, which was 166 when the child had recovered sufficiently for it to be counted, gradually increased in force and diminished in frequency, so that, at the end of two hours, it was 124 and regu-The pupils were now contracted, the face flushed, the skin perspiring very freely, and the

limbs were occasionally moved. Next morning the temperature was 102° F., and the child had vomited several times. It was kept on milk and beef-tea for several days, and made an uninterrupted recovery. The first portions of the urine were passed into the bed. A specimen obtained eighteen hours later was light yellow, free from albumin, did not darken when allowed to stand, and did not yield more than the normal quantity of indigo.

# THE TREATMENT OF HEAT-STROKE.

In the Medical News for September 3, 1892, COPLIN and BEVAN, in an interesting article on the effects of heat in sugar-refineries, give the . following directions as to the treatment which, in their opinion, gives the best results in cases of thermic fever. They state that the treatment of cases in which there is elevation of temperature may be summed up in the injunction, "Increase the peripheral circulation;" anything that will accomplish this end will help the patient. If the skin can be made intensely red, and the pulse, which may not be perceptible at the wrists, can be brought up, the patient will immediately feel better, and in the large majority of cases consciousness will at once return. While under ordinary circumstances the restoration of the activity of the cutaneous circulation is easy, in thermic fever it is not so. In the treatment of our cases, large undressed sponges, gritty and hard, were freely used by two muscular assistants. In all of the cases except the fatal one, and another to which we shall refer later, cutaneous redness was secured in from three to fifteen minutes. With the restoration of an active peripheral circulation the symptoms rapidly subsided. Remedies that attend this end may here be used with advantage. Atropine seems certainly indicated, and in our hands has given excellent results. If less than a grain be given hypodermically at a dose, the medicament is wasted; in severe cases,  $\frac{1}{40}$ , or even In, grain may be used, preferably in two doses, with a brief interval,—say, of five minutes.

Aromatic spirit of ammonia acts happily, and is the only medicament which acts with equal promptness when administered by the stomach or subcutaneously. It should be given in doses of from ½ to 1 drachm in milk. Morphine, in doses of not more than ¼ grain, may be advantageously combined with either aromatic spirit of ammonia or atropine. Strychnine does good in cases in which there is great

prostration or inordinate muscular weakness. The nausea is best combated with cracked ice.

Towards the close of the epidemic the advisability of employing amyl nitrite was discussed, on account of the promptness with which it induces a peripheral determination of the blood. The drug was used in but one case, but with the most gratifying results. A "pearl" containing three minims was crushed in a handkerchief, and the patient allowed to inhale the The headache and cramps imvapor freely. mediately disappeared like magic, and the temperature, which had been 102.6° F., fell in a few minutes to 99° F. No other medicament was used. Half an hour after the treatment the patient felt entirely comfortable, with the temperature normal, and after the administration of morphine sulphate, grain 1, and atropine sulphate, grain  $\frac{1}{40}$ , hypodermically, he proceeded home, and reported for work on the following day. Although they did not employ nitro-glycerin, it seems probable that it might be advantageously substituted for amyl nitrite. Ice applied to the head will alleviate the headache.

The reader has, no doubt, ere this expected that each successive sentence must bring some reference to the cold bath. While they believe the cold bath to be a most efficient adjunct in the treatment of the hyperpyrexia, they would at the same time urge that careful judgment be exercised in its employment. Given a patient with embarrassed peripheral circulation, with empty capillaries on the exposed surface and the blood stagnant in the glandular viscera, one should hesitate in the use of an agent that admittedly favors the very condition to be combated. The efficiency of the bath depends largely on the accompanying In seventy-five per cent. of the cases friction. here reported the cold bath was resorted to.

In all cases the routine treatment may be summed up as follows: The patient's temperature was taken; he was then placed in a low bath-tub, in which the water was exactly the same temperature; he was rubbed with large gritty sponges until redness of the skin was induced; this was followed by the turning on of the spray, the impact of which maintained the counter-irritation. After five or ten minutes the patient was removed from the bath and thoroughly rubbed with the sponges. If the temperature had not sufficiently subsided, he was again placed in the bath, and the process repeated until the temperature was reduced to the neighborhood of 100° F. In the mean time he was given, either by the stomach or hypodermically,  $\frac{1}{20}$  grain strychnine,  $\frac{1}{40}$  grain

atropine,  $\frac{1}{6}$  grain morphine, and 20 drops of the tincture of digitalis, followed by a teaspoonful of aromatic spirit of ammonia in a glass of milk. The cases did well, and while the authors would not disparage the employment of the cold bath, they would insist that its efficiency must depend upon the energy of the friction to secure a cutaneous afflux of blood.

In mild cases, in which the temperature was 101° or 102° F., from 5- to 10-grain doses of antipyrin or antifebrin relieved the headache, and usually the cramps, and reduced the temperature. Coplin and Bevan have not observed any unfavorable symptoms after the use of either of these drugs in properly-selected cases. When they have used them, they have usually accompanied their administration with applications of cold to the head, either by the ice-cap or the cold spray, preferably the latter. The cold spray, if applied to the head and nape of the neck, will rapidly reduce the temperature, and time may be gained by using friction upon the back and upon the chest and extremities at the same time.

Alcoholic stimulants should be used in the large majority of cases. They favor increase of the peripheral circulation and invigorate the flagging heart.

Bloodletting was resorted to in a single case, and upon the following indications: When brought into the accident-room the temperature of the patient was 103.6° F., and he presented no extraordinary symptoms. He was given 10 grain atropine, with 1 grain morphine. Friction was applied to the chest and trunk; he was directed to lean over the bathtub, and the cold spray was applied to the head, neck, and shoulders. The respiration became impeded; the man gasped for breath; the lips, ears, and finger-nails became blue, but not the general surface. Cheyne-Stokes breathing appeared. The man was bled to the extent of eight ounces, with immediate relief. He was sent to the Pennsylvania Hospital, and returned to work the following day.

The cold spray has in our hands been a most beneficial agent. The temperature of the water used varied from 40° to 55° F., but the force with which it was applied enhanced its usefulness, as the process practically amounted to active flagellation without inducing pain, and was promptly followed by redness.

As soon as active treatment was discontinued, or when practicable during its continuance, the patient was kept beneath the cool-air blast. One who has never seen the benefits of such a blast cannot appreciate its utility. Under active friction of the skin in the air-blast in

many cases the temperature promptly subsided. The headache was invariably alleviated. The cool-air blast is, in their opinion, a most valuable adjunct. With it should be conjoined active friction, or, if the patient is quiet, he should be in the recumbent posture, covered with a thin sheet, leaving the face free.

The regulation treatment in cases in which the temperature was subnormal (heat exhaustion), consisted in the administration of stimulants, usually alcoholic, although hot drinks may with advantage be combined with alcohol. Rest in the recumbent posture is imperative.

# THE TREATMENT OF TYPHOID FEVER BY THE COMBINED USE OF BATHS AND INTESTINAL ANTISEPSIS.

SANTA MARIA Y BUSTAMANTE (Boletin de Medicina Naval, April 15, 1892; Revue Internationale de Bibliographie Médicale, Pharmaceutique et Véterinaire, June 25, 1892) has proposed for the treatment of typhoid fever the combined use of intestinal antisepsis and lukewarm baths at a temperature of 30° C., believing that in this way the danger of producing cardiac collapse by cold bathing may be averted. According to the case, the author administers beta-naphthol with carbon, salol, or resorcin, allowing the patient to remain in the bath-tub for a period of fifteen minutes, applying, at the same time, cold affusions to the head. Of thirtyseven cases treated by this method, and in which there were present symptoms of cardiac collapse, in only four cases fatal results ensued.

# THE ABORTIVE TREATMENT OF FACIAL ERYSIPELAS.

In an article by CH. TALAMON upon the above subject (La Médecine Moderne, July 7, 1892), the author reports five cases in which the emplayment of corrosive sublimate by means of irrigation gave the most excellent results. The drug is dissolved in ether, and the application made by an irrigating apparatus. In summarizing his method, the author makes the following statements: 1. The ethereal solution employed must be of the strength of one per cent. 2. A small apparatus, to be managed by the hand and of sufficient pressing force, should be used. 3. The duration of the treatment and the force of the irrigating jet must be taken into consideration. 4. The thickness of the patient's skin, the depth of the dermic infiltration, and afterwards the resistance of the diseased part, the projection over the healthy

skin of the affected borders, and the existence or absence of bullæ must also be taken into ac-5. Vesication of the skin is not to be feared. 6. Treat lightly the centre of the diseased part; the irrigation is to be applied chiefly and largely at the periphery, and especially over the projecting borders. . 7. Irrigate systematically the whole of the affected part, beginning at about one or two centimetres over the healthy skin, and follow this line around in order to prevent the extension of the erysipelatous inflammation. 8. Bathe only the tumefied superior eyelids, but irrigate extensively over the inter-superciliary space, and over the superior and external orbital border, in order to intercept the passage of the disease towards the 9. Cover the face, then, with compresses soaked in borated water, keep them wet, and renew them frequently. 10. One or two good irrigations are sufficient when they are properly made; the others should be of short duration. Pay especial attention to the peripheries of the diseased part, where the erysipelas has a tendency to pass over the limited area. 11. Over the neck, the back, the trunk, and the extremities the irrigations should be more prolonged than over the face. 12. Inform your patient before the beginning of the treatment that the irrigation may produce a painful smarting, but that this is not so painful as the distention of the tissues caused by the erysipelatous infiltration; that the face may swell up; that crusts may form; phenomena all which the disease itself may and does produce. 13. Do not detach the crusts with the fingers; leave them alone, to be removed by themselves or under the application of the borated compresses.

By following the preceding rules, the author adds, all forms of erysipelas may be absorbed in from one day to a week, and even when least successful the method may prevent the extension of the disease and diminish its duration and virulence.

### NEW DRUGS.

A review of some of the Indian medicinal plants is made in the Zeitschrift d. Alleg. Æst. Ap.-Ver., No. 13, 1892 (Les Nouveaux Remèdes, July 8, 1892), as follows: Adulsa, the leaves and branches of the Adhatoda vasica (Acanthaceæ), is reputed in India as an expectorant, and is employed in the treatment of pulmonary phthisis and other affections of the chest; the leaves are also used against asthma. Balbij, the seeds of the Abutilon indicum (Malvaceæ), is credited

with diuretic properties. Daruri, the seeds of the Argemone mexicana (Papaveraceæ), furnishes an oil considered as a good remedy against dysentery and other diseases of the intestinal tract. Gelaphal, the fruit of the Randia dumetorum (Rubiaceæ), is said to possess emetic properties, and is used in the treatment of dysentery as a substitute for ipecacuanha. Two or three fruits are given as a single dose. Similar to the Cocculus indicus, the randia produces a narcotic effect on fish. To hurmal, the seeds of the Peganum harmala (Rutaceæ), properties similar to those of Indian hemp are ascribed. Kaiphal, the bark of the Myrica sapida, is employed as a stimulant in bronchitis and affections of the chest in general. Kaknaj, the fruits of the Writhania coagulans (Solanaceæ), is used by the natives to curdle milk. Káladána, the seeds of the Ipomæa hederacea (Convolvulaceæ), is officinal in the Indian Pharacopœia (1868), and of it an extract, a tincture, and a resin are employed as substitutes for similar preparations of jalap; the resin is the active principle, and it is commonly considered as a gentle cathartic. Kanyal, the seeds of the Nelubium speciosum (Nymphaceæ), the flower of the lotus, constitutes an excellent food, and as such reputed in India and China. Kawun, the fruits of the *Helicteres isora* (Sterculaceæ), is employed in popular medicine in the treatment of children's diseases. Maïda-lakri, the bark of the Tetranthera laurifolia (Laurinaceæ), is used by the natives as a remedy against diarrhœa and dysentery. Suffed bahman, the root of the Centaurea behen (Compositæ), of which there are two varieties,—the white and the red, -is prescribed by the Arabian physicians as an energetic aphrodisiac. Talimkhana, the seeds of the Hygrophila spinosa (Acanthaceæ), is reputed as an aphrodisiac; the root of the plant is employed as a diuretic and in the treatment of hepatic affections. Utanjan, the seeds of the Blepharia edulis (Acanthaceæ), is found in every drug-store, and its therapeutic employment is varied.

# CUPREINE AND ITS DERIVATIVES.

According to E. GRIMAUX and J. V. LABORDE (La Tribune Médicale), cupreine, extracted from Quina cuprea, is an alkaloidal phenol, which, by substitution of the radicle CH<sub>4</sub>, gives origin to quinine, and, by substitution of the radicle C<sub>2</sub>H<sub>5</sub>, to a homologue of quinine,—the quinethyline. The formula of cupreine is C<sub>15</sub>H<sub>21</sub>Az<sub>2</sub>O,OH; that of quinethyline, C<sub>13</sub>H<sub>21</sub>Az<sub>2</sub>O,OC<sub>2</sub>H<sub>3</sub>. Another derivative, the quino-propyline or propylo-cupreine,

is represented in the formula of  $C_{19}H_{21}Az_2O$ ,  $OC_3H_2$ . The salts of three bases—cupreine, quinethyline, and quino-propyline—have been studied physiologically in a series of experiments, with interesting results.

In regard to cupreine chlorhydrate, this possesses antithermic and analgesic properties. It acts primarily, its influence being decided upon the sensory and perceptive centres of the brain, and in this respect resembles quinine; the toxicity of cupreine, however, is less pronounced, from the fact that tremors are not produced by this drug as in the case of quinine.

The actions of the sulphate of quinethyline are similar to those of the chlorhydrate of quino-propyline, and may be summed up as follows: Unlike quinine, which produces in the normal animal only a comparatively slight antithermic effect, both quinethyline and quino-propyline cause a marked lowering of the normal temperature. The activity of quino-propyline, other things being equal, is greater than that of either of the other two substances.

This antithermic action is, at the same time, powerful and rapid, and comes on together with the stupefying and analgesic effects produced, showing that a simultaneous and equally dominant influence is exercised upon the sensory and perceptive centres.

The results of the experiments, so far, appear to demonstrate that the new remedies possess important therapeutic properties, and one of the authors has already noticed success following the ingestion of cupreine in one case.

# THE EMPLOYMENT OF SULPHORICINIC ACID AND THE SULPHORICINATES.

These medicaments, recently introduced into practical medicine by Berlioz and Ruault, may be prescribed in the following manner, as recommended by BARDET in his "Formulary" of the new remedies (Journal de Médecine et de Chirurgie Pratiques):

- 1. SULPHORICINATED PHENOL.
- R. Sulphoricinate of sodium, 60, 70, 80 grammes;
   Pure phenic acid, 40, 30, 20 grammes. M.
   This mixture, in either proportion, is employed against diphtheria.
  - 2. SULPHORICINATED NAPHTHOL.
  - **R** Sulphoricinate of sodium, 90 grammes;  $\beta$ -naphthol, 10 grammes. M.

Two dessertspoonfuls are placed in one litre of water, and the resulting emulsion is employed for douching purposes in the treatment of osana, the bad odor of which is said to rapidly disappear.

#### 3. SULPHORICINATED CREOSOTE.

R Sulphoricinate of sodium, 85 grammes; Beechwood creosote, 15 grammes. M.

This mixture is employed as such, or in the form of emulsion (two dessertspoonfuls in a glassful of water), in the treatment of ulcerative laryngeal tuberculosis.

### 4. SULPHORICINATED SALOL.

R. Sulphoricinate of sodium, 85 grammes; Salol, 15 grammes. M.

This mixture is used in the treatment and dressing of wounds.

All these different solutions are prepared by the aid of heat; on cooling, those of phenic acid, salol, and creosote become transparent shortly or after a certain time. The betanaphthol solution remains always cloudy.

## DEATH FROM THE INJECTION OF SES-QUICHLORIDE OF IRON INTO THE UTERUS.

DR. H. PLETZER (Centralblatt für Gynākologie) adds one more to the list of fatalities resulting from intrauterine injections. A daylaborer's wife was admitted to the gynæcological clinic to be treated for retroversion of the uterus and chronic endometritis. In 1881, in the first year of her married life, she contracted syphilis from her husband. In the summer of 1881 she experienced a hemiplegia, from which some lameness still remained in the extremities of her right side at the time of her admission. She had survived seven confinements; five resulted in abortions or stillbirths; the two other children each lived but two weeks.

On the 11th of November copious shreds of proliferated mucous membrane were removed from the uterine cavity, and the mucous membrane cauterized with iodine. The replaced uterus was held in position by a Hodge pessary. Now a fibroid as large as a hazel-nut could be discerned, adhering to the back wall of the uterus, towards the peritoneal surface; it was not pressed upon by the pessary. After four days of rest in bed the uterus was washed out on the 16th and 18th of November with a two-per-cent. solution of carbolic acid, and then cauterized with tincture of iodine. On the 20th of November the woman's period occurred without any trouble, it being more profuse than usual, and lasting until November 26. From the 27th of November to the 3d of December the same treatment of the mucous membrane of the womb was used every second day. On December 3 there was a more marked bloody color observed in the fluid flowing out.

There was a slight passage of blood during the night of the 4th of December, and as there was still more bleeding when the washing out was done at quarter past ten o'clock the next morning, the use of iodine was omitted in the hope of stopping the hemorrhage by the injection of sesquichloride of iron. This was carefully done, but the patient complained of pain. This sensation increased in the following fifteen minutes to severe colicky pains. She had great pain in her abdomen, her skin was livid, and pulse small and very frequent, with stertorous breathing.

Subcutaneous injections of ether, and the application of ice to the abdomen, only produced temporary improvement; the difficulty of breathing increased, the senses became benumbed. All attempts to increase the power of the heart were vain. At half-past twelve, or two and a quarter hours after the attack, death occurred.

The autopsy on the following day revealed the following conditions: On the upper surface of the left optic thalamus was a flat, sunkenin portion of a yellowish color and about the size of a ten-pfennig piece. This consisted of a moist, yellow, tolerably tough tissue. In the right heart were isolated thrombi between the trabeculæ. In the veins of both lungs, especially the large veins, were small, reddish-blue, tolerably firm clots, which were not adherent to the walls, and did not close the lumen, and were readily moved. Reaching from the iliac vein to the division of the common iliac vein, and only slightly adhering to the vein-wall, was a blackish-brown clot, about one and oneeighth inches long. The vein-wall was smeared a greasy brown at the seat of the thrombus.

There was a defect in the right wall of the uterine cavity, somewhat above the isthmus, running lengthwise of the womb, for a distance of a little over half an inch; it was like a tear in the mucous membrane and muscle, apparently less than a quarter of an inch deep. The surrounding mucous membrane was rough. Small veins reached to the bottom of the defect, which were filled full of a dry, black, very firm clot, so that the whole felt like a net of thick-knotted strands. One of these veins could be followed like a knotted strand, as thick as a catheter, in the pelvic fascia as far as the iliaca communis. The cellular tissue about the thrombosed veins, especially near the uterine defect, was of a brownish color. The blood was found fluid throughout the body.

In spite of the frequent use of weaker or stronger caustic applications to the uterus, there occur very few deaths, so it appears important to call attention to the possible dangers attending it. In this case the action of the chloride of iron solution is explained by the fact that the fluid was probably taken at once into the open veins of the defect in the uterus. It is possible that this tear occurred during one of the earlier syringings, and that the hemorrhage which the iron was used to stop, resulted from it.

# AGATHINE-A NEW ANTINEURALGIC.

Dr. E. ROSENBAUM (Deutsche Medizinal-Zeitung) calls the attention of his colleagues to agathine, a new drug prepared by a chemist in Frankfort-on-the-Main. Chemically it is salicylamethylphenylhydrazone, obtained by condensation of salicylaldehyde with a-methylphenylhydrazine.

It is odorless and tasteless, insoluble in water, soluble in alcohol and ether, and can be melted at 166° F.

After it had been tried upon animals, it was first used in the city hospital, and then by other physicians in Frankfort. Dr. Rosenbaum gathers their reports, showing that it has been used with good results in the treatment of sciatica, neuralgia, rheumatism, and articu-The action does not appear lar rheumatism. to be an immediate one, but several stubborn cases of the diseases mentioned yielded to it when given in doses of 71/2 grains three times There appear to be no bad accessary symptoms, even when it is used for a long time. Only one patient is reported to have suffered from headache, which occurred half an hour after taking the dose, and lasted one hour.

## THE THERAPEUTICS OF DIPHTHERIA.

DR. L. SCHWARZ (Internationale Klinische Rundschau) says he claimed as early as the seventies that diphtheria was a disease caused by a microbe. He lost two patients with this disease, and banished the rest of the family from the house for several months, having, as he supposed, a most thorough disinfection of the whole premises in the mean time. After three months, upon the return of the family to the house, two more children were stricken down and died of this dread disease.

Dr. Schwarz thinks all the varied treatment by means of cauterizing and painting the diseased places are futile, largely on account of the impossibility of carrying them out thoroughly, especially when the patients are children.

For a time he was much pleased with flowers

of sulphur in powder form, which he had blown into the mouth, throat, and nose with a blower or through a simple paper tube or straw. Still even this useful remedy was not all that could be wished, and he tried adding carbolic acid to it. This gave still better results, but some could not bear the carbolic acid, and so many developed symptoms of poisoning that he had to abandon it.

Since that time he has made use, during three years, of sozoiodol. At first he always mixed it with flowers of sulphur, and had it blown in every four hours. After the second application the temperature falls, the dirty gray covering becomes lighter, and the general condition is better. At the end of twenty-four hours the temperature is usually between 97.5° and 99.5° F.; even in the most unfavorable cases it never rises above 100.3° F. It seems as if the sozoiodol, being so easily soluble, penetrated to the most narrow sulci of the tonsils, and there destroyed the bacilli, besides passing easily into the circulation and making way with reabsorbed streptococci.

During the past six months Dr. Schwarz has passed through a small epidemic of diphtheria in one quarter of Constantinople. The source of infection was the mission school, which furnished most of the patients. Up to the date of writing he had observed seventy patients; twenty-four of these were sent to hospitals, few of them recovering. Forty-six he treated personally; of these, twenty-three recovered fully in a short time; eighteen continued to suffer from paralysis of the pharynx and soft palate for several weeks; five died. There were thirty-four between one and four years old and twelve between that and twelve years.

In twenty-two cases the diphtheria was confined to the tonsils, in ten the pharynx and nasal passages were also involved, and in fourteen the larynx was involved. Of those who died, two were not seen until the fourth and sixth day, and had already been cauterized several times. One refused all nourishment, and died from exhaustion.

This shows a very favorable result. One great trouble with diphtheria is the fact that the physician rarely sees the patient until after two or three days of illness. Cases seen at the start are all more quickly cured.

Some of the children seen on the first day had dirty gray spots on the tonsils, which could not be certainly diagnosticated as diphtheria yet, as they came from families where the disease existed, and the pseudo-diphtheria is not only difficult to distinguish from the disease itself, but often develops into it, he

proceeded at once with the same treatment for all these cases. He found it a good plan to have the child take several swallows of water before making the examination, thus freeing the throat from mucus. On finding suspicious places, he at once ordered for children under three years sodium-sozoiodol, gr. xlv; sublimated sulphur, gr. clxxx. For children up to five years, a fifty-per-cent. mixture; and for still older children, pure sodium-sozoiodol, and had this blown into the mouth and nose every four hours. Even when there were no signs of the pharynx and nose being involved, he had the powder put in to prevent this extension, if possible. Besides that he gave the children a tablespoonful every hour of a solution of chlorate of potassium, fifteen to twenty-two grains to six fluidounces. He paid great attention to the action of the heart, often ordering a stimulant, usually a decoction of cinchona with cognac or Malaga wine. He required a fluid diet, such as milk and soup with yolk of egg, given frequently to keep up the strength. For swelling of the glands, he had mercurial ointment rubbed The powderings were kept up for several days after the process was complete, and he had observed no relapse. The bad form, complicated with retention of the urine, of which he only had two cases, he combated with large doses of calomel. He thinks it would be of great interest if the action of the sozoiodol upon the pure cultures of the bacilli should be tested. At present it is not possible to determine whether its action is more or less favorable, on account of the admixture of saliva.

# TWO CASES OF DIABETES MELLITUS TREATED WITH JAMBUL.

DR. GERLACH (St. Petersburger Medicinische · Wochenschrift) reports two cases of diabetes mellitus treated with jambul. Neither of them gave at all satisfactory results. urine was all carefully collected, and a tabulated daily statement kept, which showed by a curve the slight decrease in sugar during the use of the jambul. The first patient ate very moderately, and was slightly improved; her case was simple and capable of improvement. The second patient was a man whose desire for food was great; his greediness, no doubt, was in part the cause of his growing worse instead of better under treatment. However, Gerlach learned afterwards that Professor Kobert makes use of the extract of the whole fruit with good results, while in the cases reported he (Gerlach) had used the seeds. Perhaps the active principle of the remedy is not contained in the seeds, but in the remaining portion of the fruit.

## THE USE OF CHLORINE AS AN ANTI-DOTE FOR COBRA KENOM.

DR. VINCENT RICHARDS has contributed, through Warden, to the *Indian Medical Gazette* for July, 1892, the results of his experiments in cases of poisoning by cobra venom. The experiments are given in some detail, and the conclusions to be reached are that chlorine is not an antidote to cobra venom. If allowed to act sufficiently long upon the venom, it may possibly lessen or destroy the poison, but then it would be no better than potassium permanganate,—a local chemical antidote, and much less harmful drug.

Other experiments by Kanthack show that cobra poison diluted with chlorine-water, and allowed to stand for twenty-four hours, caused death in twenty-four hours when injected into a rat, while the same dose of pure venom caused death in one hour. Cobra venom and chlorine solution, after standing for five days, lost its toxic properties.

# CHLOROFORM ADMINISTRATION.

In the *Edinburgh Medical Journal* for September, 1892, Dr. AITKEN has contributed an article on chloroform administration.

During the recent vigorous discussion on chloroform administration little or no reference was made to two cardinal points. These are—

The peculiar sensitiveness of the puerperal woman to the drug.

That there must be for every person, idiosyncratic or not, a minimum dose, which, if not exceeded, is absolutely safe.

In respect to the first statement, it is to be noted that the sensitiveness is twofold: a. Only a very small quantity of chloroform is needed to produce narcosis.  $\delta$ . It is not necessary, in order to abolish pain, to produce complete unconsciousness; but further pain is speedily allayed if the inhalation be given at the right moment,—i.e., at the very commencement of a uterine contraction. With our present means we have great difficulty in achieving our purpose; for just as the pain comes on we have to fumble with a bottle, and before we have the chloroform applied the pain is either far advanced or gone. Hence the frequent resort to complete narcosis, which is quite unnecessary, since we know that a woman can be at the same time rendered free from painful sensations and able to converse. As regards the second point, it seems that, obvious as it is, we almost universally violate the principle involved, with the sad results the journals are constantly recording.

It may be asked quite justly, How can we know, with our usual apparatus, when we have exactly reached the minimum and safe dose? The answer may be decidedly given, We cannot know. A patient, to whom the author administered the drug with a mask, took a larger amount of chloroform than that ordinarily necessary to produce complete narcosis. sides, it may be accepted that if a towel be used, so free will be the supply of chloroform in a given time, that at the moment complete narcosis is induced there still remains some of the drug yet to take effect in the system. In Aitken's opinion, the only safe way is to give drop by drop, and so one can be quite sure of the moment of narcosis, or, at any rate, feel confident that he has no unknown quantity to reckon with. It may be objected that this method of drop doses takes a long time. we must always realize that of the two parts of an operation, the chloroform administration is in most cases by far the more important; as Mr. Chiene has wisely and well said, "We are gradually advancing to the death-point." operator refuses to take time to the cutting part, however much demand of time and patience is made upon him. The writer's experience has been that the slow method requires much less chloroform, and the after-effect is much better. For example, he assisted at a long and tedious operation, but after a time the patient seemed to be actually asleep, and the cutting went on for a considerable period without any inhalation. On another occasion he succeeded in producing narcosis for about one hour with half an ounce of chloroform.

Dr. Aitken has devised an instrument in order to carry into practice the matters he lays stress upon. It consists essentially of a box, with inner and outer cylindrical casings. outer cylinder is perforated for the nose and mouth-piece, for the air-holes, for the filling funnel, and for the slot. The inner cylinder is perforated by the breathing-holes, and revolves inside the outer cylinder in such a manner that the holes in the inner and outer cylinders are open and shut simultaneously. Further, some of the perforations open directly into the general cavity, while most of them communicate with it only through the sponge cavity. slot controls the revolution so as to secure this, and there is a sheet of perforated zinc, cutting

off a compartment for the sponge. There is also a small funnel, into which chloroform can be dropped through a hole in the cylinders into the sponge cavity. The instrument is fitted with a lid. By moving the knob in one direction all the holes will be closed.

In obstetric practice the sponge can be well soaked with chloroform, and intrusted either to the nurse or the patient herself, with the instruction to keep the inhaler closed during the intervals; but as soon as there is any indication of pain, the knob is to be pushed back, thus opening the holes and the apparatus applied, but to be at once removed on the cessation of the contraction and the holes closed. With this contrivance we are at once ready at the required moment, and it is also quite safe. But, though the inhaler is chiefly intended to meet the requirements of midwifery, it is hoped that it may be adopted in general practice. 1. It seems well adapted for the slow method, as it permits almost no chloroform to be dissipated. 2. It can be applied and removed at any moment. 3. It permits of a free dilution from the large number of perfora-Lastly, it saves an enormous quantity of chloroform, which is in the ordinary method wasted.

# THE ANTISEPTIC INTRAUTERINE INJEC-TIONS AFTER LABOR.

Keifer, writing upon the above subject (La Presse Médicale Belge), condemns the use of the antiseptic intrauterine injections after a normal labor, basing his argumentation in that such a procedure hinders a physiological hæmostasis; destroys an element that may prevent relaxation of the uterus; diminishes the vital resistance of the injured tissues; lets in air that may itself be an origin of infection; and introduces pathogenic germs with the sound, notwithstanding the greatest precau-These arguments, the author-believes, are sufficiently strong to reject, through principle, the intrauterine injections after a normal accouchement. All physiological phenomena occur in a healthy individual without therapeutic interference, and it is folly to endeavor to combat an enemy that does not exist. no more reasonable to wash out the uterus after a physiological delivery than it is to apply injections after each menstruation, or to douche the urethra after each ejaculatory act. The non-occurrence, on the other hand, of any accident after the uterus has been washed out, is no conclusive proof of the efficacy or innocuousness of the injections; but a positive fact, and which cannot be denied, is the poisoning, the condition of syncope which may be produced in the most normal cases, and where the injections are manifestly the cause.

## THE THERAPEUTIC ACTION OF PRO-TEINE IN A SEASE OF ACTINO-MYCOSIS.

A case of actinomycosis of the neck and face, occurring in a young man, nineteen years of age, is reported by Ziegler (Münchener Medicin. Wochenschrift, No. 23, 1892; Revue de Therapeutique Générale et Thermale, July 20, 1802), in which the injections of proteine produced satisfactory results. Surgical interference was opposed by the patient, though some scraping practised showed that the yellow granulations had invaded the muscular tissue. About two months after the patient had been admitted into the hospital, injections of proteine extracted from cultures of the staphylococcus aureus were begun. The injections were introduced into the infiltrated tissues, the procedure being followed by a slight pain, which only lasted for a few minutes, and after a few hours, by a slight feverish reaction, characterized by local redness, and pain extending a little beyond the point of injection. At only one time did the patient, following an injection, suffer general malaise and a rise of temperature to 30.5° C., preceded by chilly sensations. amelioration, however, was noticeable; the tumefied condition of the left cheek disappeared almost entirely, and the inferior maxillary was again able to perform its normal The author attributes these good movements. effects to the injections of proteine,-a substance analogous to tuberculin in composition.

# FORCED ALIMENTATION IN THE TREAT-MENT OF TYPHOID FEVER.

Reviewing the literature of the subject, with especial reference to the recent work of Pouritz, R. Romme (La Tribune Médicale, July 21, 1892) favors the administration of a forced diet in the treatment of typhoid fever, but it must be of a liquid kind, since a solid one may and does tend to produce intestinal perforation. The experiments instituted by Pouritz were directed to study the amount of nitrogen ingested and that given off by the excretions, such as the urine and the fæcal matters. To study the effect of the two principal dietetic treatments, Pouritz placed two patients upon a light diet, giving them, in the course of twenty-four hours,

in the form of milk and bouillon, about 40 grammes of albuminoid substances, 10 to 20 grammes of fats, and 100 to 150 grammes of hydrocarbons; this diet was continued in the febrile period as well as during the stage of apyrexia. In the same manner he subjected six other patients to a forced alimentation, ordering the ingestion of 160 grammes of albumin, 60 to 90 grammes of fats, and nearly 300 grammes of hydrocarbons, the articles of food consisting of eggs, boiled or broiled meat, dry-meat dust, bread, etc. In all cases the medical treatment was purely hygienic, -mouth-washing with borated water, abundant cooling drinks, alcohol in the form of wine, cognac, or Stokes's potion, and two daily baths at a temperature of 37° C., of a duration each of from fifteen to thirty min-The results of this method are given in tabular form, and from a close examination of them it is found that the percentage of assimilation is about the same in the two classes of cases,—that is, in the first category, we have a percentage of from 79 to 82; in the second it varies from 75 to 83. The superiority, however, of the forced alimentation is sustained. since in this case assimilation is as good as in the classical feeding, while the daily loss of nitrogen in the first instance (two to three grammes) is less. In a general way, this forced alimentation was well tolerated, and enhanced a good appetite, especially two or three days after the establishment of the regimen. The six patients all lived, and their typhoid condition was less marked than that of those subjected to the classical method. The diarrhoea diminished, and in one case there was a tendency to constipation. Nausea and vomiting were absent. The stools lacked that fetid odor peculiar to typhoid patients, and as to their consistency, this exhibited a normal condition. Diuresis was increased (two litres per day), and there was no albuminuria produced. The diminution of the fever was followed by a convalescence without complications, and there were no relapses, no slight febrile movements, no incidental diarrhœa. About the third or fourth day of apyrexia, the patients expressed a desire to get up. It is worthy of note, nevertheless, that in these patients the appetite during the period of convalescence was not so good as that exhibited by the patients subjected to light diet.

The statistics of Kissel are similarly interesting. This author treated seventy-nine cases of typhoid fever in children. These received daily 79 grammes of albumin, 40 grammes of fat, and 120 grammes of hydrocarbons, in the form of milk, soup, dry-meat powder, bread,

etc. As in the case of adults, the little patients stood well the relatively large quantity of food, and even exhibited a good appetite. Of these seventy-nine patients, two died, and these two had been given solid food, which caused perforation of the appendix vermiformis and the subsequent fatal peritonitis. Generally, the development of the disease was mild, and, in other respects, the results confirmed those obtained by Pouritz in the treatment of the malady in adults. Further commentary is not necessary.

# SULPHATE OF SODIUM AND INTESTINAL ANTISEPSIS IN THE TREATMENT OF ACUTE DYSENTERY.

Of the remedies recommended in the treatment of acute dysentery, such as calomel, ipecacuanha, and sulphate of sodium, the latter is at present much lauded as a superior drug. According to E. GRUET (Bulletin General de Therapeutique Médicale, Chirur. Obstet. et Pharm., July 30, 1892) sodium sulphate is absolutely innocuous and is well borne; it must, however, not be employed by itself, as it acts slowly, and is not powerful enough in certain forms of the malady. Associated with intestinal antiseptics. the drug under consideration is one of the most rapidly efficacious remedies in the treatment of dysentery. The majority of cases occurring in temperate or tropical climates yield to this medicinal agent. The author advises the following prescription to be used every day:

# Sulphate of sodium, 10 grammes; Water, 200 grammes. M.

This mixture is taken during the day, in four doses, with an interval of three hours each time. Naphthol is at the same time given, of which 4 cachets, containing each 50 centigrammes, are prepared, one of these to be taken every three hours. An injection is also prepared by putting either 20 grammes of boric acid, or 25 centigrammes of naphthol, or still 50 centigrammes of phenic acid, in 1000 grammes of water.

During the whole treatment a milk diet should be ordered. The sodium salt should be continued until the stools assume their normal consistency and composition. It is rarely necessary to administer more than ten grammes a day. The ingestion of the naphthol should be preceded and followed by a few mouthfuls of milk, as in this manner the drug is well borne. If it should not be well tolerated, salol may be substituted for it. The injection should be warm, and used only once a day, generally at noon or a little after. The first day the solution of boric acid is to be employed, followed during subse-

quent days by those made with naphthol and phenic acid respectively. Towards the end of the disease, the author recommends nitrate of silver in the proportion of 20 or 30 centigrammes to 1 litre of distilled water. Warm fomentations over the abdomen with camphorated oil of chamomile may be applied, and later, generally in the evening, an injection of starch and opium, to diminish the tenesmus and relieve the intestinal pains that are often the cause of insomnia. Even after the stools have acquired their normal condition, it is well to continue the antiseptic injections for about eight days longer in order to prevent relapses or a change from the acute to the chronic type of the disease.

# PULMONARY EMBOLI FOLLOWING MER-CURIAL INJECTIONS.

Interstitial injections of mercury, so largely used at present in the treatment of syphilis, are sometimes dangerous. BLASCHKO, quoted by the Revue de Thérapeutique Medico-Chirurgicale, August 1, 1892, reports two cases in which the injections of mercury were followed by pulmonary symptoms. In the first case, the patient complained of thoracic pain, coughed, and had accesses of oppression. On the day after the injection, the respiration became difficult, and the patient coughed bloody sputa. The second patient also complained of pain in the side, coughed, expectorated bloody sputa, and had a little fever. The symptoms in both cases disappeared in about three days. In a third instance, the patient had violent attacks of cough after the injection. These symptoms are explained by the author as being due to emboli caused by the paraffin employed as a vehicle for the mercurial preparations which are insoluble, and are only suspended in the liquid. writer believes that the mercurial injections give the best results in the treatment of syphilis, but that they must be administered by themselves, as in this manner they produce no untoward effects. The injections should not be so frequent in individuals affected with pulmonary troubles, especially phthisis.

## THE TREATMENT OF ACUTE PNEUMONIA.

A. SALLARD (La Mèdecine Moderne, August 4, 1892) reviews at length the literature regarding the treatment of acute pneumonia, and, in summing up the subject, says that an uncomplicated case requires but a moderate interference: absolute rest, a liquid diet (bouillon and milk); 8 to 10 wet cuppings at the point of pain in the

chest; later, a few dry cuppings to lessen the dyspnœa; 60 to 80 grammes of rum or cognac, pure or diluted to suit the taste of the patient; 2 to 4 grammes of antipyrin (in cachets of 50 centigrammes each); 2 to 5 centigrammes of thebaic extract, in pill-form, to combat the in-This is all that is necessary, as a general rule, to conduct the disease to a period of defervescence. A tonic medication (alcohol, ether, and caffeine) is the one par excellence to employ in secondary pneumonias complicated with Bright's disease or cancer, and in those of an adynamic or senile type. Pneumonias of drunkards require high doses of alcohol and the administration of the thebaic extract in doses of from 5 to 20 centigrammes. In pneumonias characterized by bilious symptoms, emetics and cathartics are indicated; and in the malarial forms, or in that occurring during an attack of influenza, the sulphate of quinine is one of the best remedies. In pneumonias of children, the medicinal treatment should be quite moderate: 15 to 20 grammes of pure rum, administered in grog or coffee, in dessertspoonful doses; a little chloral at evenings to combat any excitement or tendency to delirium, or, better still, warm baths of a quarter of an hour duration; and, if the dyspnœa is intense, one or two mustardwater baths of the same duration.

The following prescriptions may be used for adults:

- 1. CORDIAL POTION OF DUJARDIN-BEAUMETZ.
- B. Dry extract of quinquina, 4 grammes;
   Tincture of balm-mint, 30 grammes;
   Tincture of cinnamon, 8 grammes;
   Malaga wine, 90 grammes;
   Syrup of bitter orange-peel, 30 grammes.
   M.

To be given in dessertspoonful doses in the course of the twenty-four hours.

- 2. SOLUTION FOR HYPODERMIC USE.
- Benzoate of sodium, 3 grammes; Caffeine, 2 grammes; Boiling water, 10 grammes. M. One to two syringefuls a day.
- 3. Potion for Children (Dujardin-Beaumetz).
  - Bromide of potassium, 2 grammes; Water,

Syrup of chloral, of each, 60 grammes. M. A dessertspoonful in a cup of milk, to which the yolk of an egg may be added.

DANGERS AND DISADVANTAGES OF AD-MINISTERING CHLOROFORM IN THE PRESENCE OF A NAKED FLAME.

In the Birmingham Medical Review for August, 1892, CHARLES MARTIN states that about five years ago, while acting, in his early student

days, as an anæsthetist to a small provincial hospital, he was led to make some observations on the decomposition of chloroform in the presence of a naked flame. What first drew his attention to the subject was that on certain occasions all those present in the operating-room became affected with an extremely irritating cough, and that the administration of chloroform seemed on those occasions to be fraught with more than usual danger to the patient. He noticed that the unpleasant symptoms did not arise unless the administration of chloroform has lasted half an hour or more, or unless several operations had been performed in the same room in succession. All those present in the room displayed the following symptoms, viz., a dry, irritating, spasmodic cough, gradually becoming severe; smarting of the eyes; a pungent odor, somewhat resembling that of chloride of lime, and accompanied by a stinging sensation in the nostrils; and a sense of oppression in the chest amounting to actual distress. The patient's condition at these times not infrequently caused great anxiety, and in many cases it was with difficulty that death was averted. All were not affected alike, for in some the respiration and heart failed gradually and synchronously, indicating a simultaneous weakening of both the cardiac and the respiratory mechanisms; while in others the respiration became embarrassed, stridulous dyspnœa became marked, but the heart's action remained unaffected at first, though later on cyanosis supervened and the pulse became weakened.

In the first group of cases the patient was saved by artificial respiration and the administration of ammonia vapor and nitrite of amyl; in the second group of cases, by the same treatment, with, in addition, the forced extension of the neck over the end of the table to facilitate the free passage of air. It was particularly noticed how efficacious the ammonia vapor was as a means of resuscitation. Sometimes, in the early administration of the anæsthetic, an irritating spasmodic cough was produced in the patient also; but this, in my experience, only took place when there had been one or two previous operations in the same room that day, and when, therefore, there was a considerable quantity of the acrid vapor in the atmosphere of the room before that administration was commenced.

On several occasions the window was opened to admit pure air, and, as the air from without mixed with the vapor-laden atmosphere of the room, a distinct haze or mist was produced.

These events demanded some explanation, and, in attempting to arrive at one, various causes were from time to time assigned. At

one time it was thought that the carbolic acid used in the steam spray was impure. This was disproved by the occurrence of all the symptoms in cases where the spray was not used at all. It was then suggested that the chloroform was impure, and had partially decomposed, previous to use, into various chlorine compounds. But on washing it no such compounds were dissolved out, and the washed, pure chloroform when again used produced the same effect.

It was then in the spring of the year, and it was noticed that the symptoms never occurred unless the day was sufficiently cold to demand the use of a large gas-stove, which had recently been erected in the room. Therefore it was thought they might be due to escape of the fumes of partially burnt gas from the stove. This explanation was shown to be insufficient by sitting in the room for several hours, at a time when chloroform was not being administered, and, although the stove was lit, no coughing was produced. Still, however, the stove was suspected to be a factor in its causation, and therefore measures were taken to heat the room by means of hot-water pipes. stove was discontinued, and for months we were free from trouble.

An operation, however, had to be performed in an urgent case late one night, and we were at once attacked by our old enemy. The stove could not be to blame, for it was not lit, but the room was brilliantly lighted by a large fan of gas jets just above the operating-table. This led the author to suspect that the chloroform underwent some decomposition produced by its contact in the one case with the flame of the gas-stove; in the other, with that of the numerous gas-jets; and this was the correct explanation.

On going out into the fresh air all experienced a pungent, limy taste in the mouth, and the acrid odor became intensified. This aftertaste and odor remained for many hours. The after-effects observed in the patient were mainly those of bronchial irritation, sometimes amounting to bronchitis, and more rarely to bronchopneumonia.

The chemical change which the writer believes takes place is that two molecules of chloroform combine in the presence of the flame with one molecule of carbonic anhydride and one of oxygen, and produce three molecules of carbonyl chloride and one of water.

$$_{2}$$
CHCl<sub>3</sub> + CO<sub>4</sub> + O<sub>4</sub> =  $_{3}$ COCl<sub>4</sub>H<sub>4</sub>O.

But carbonyl chloride is an unstable body, and a second reaction takes place, by means of which one of the molecules of carbonyl chloride is decomposed by one of water, and produces as a result two molecules of hydrochloric acid and one of carbonic anhydride.

$$COCI_H_O = 2HCl + CO_A$$

So that the two original molecules of chloroform yield two molecules of carbonyl chloride and two molecules of hydrochloric acid. The remaining molecules of carbonyl chloride, he believes, break up into hydrochloric acid and carbonic anhydride by uniting with the watery vapor in the atmosphere. So that the final result is that, for every two molecules of chloroform that are decomposed, six molecules of hydrochloric acid may be formed.

$${}_{2}CHCl_{3} + CO_{4} + O_{4} + {}_{2}H_{2}O = 6HCl + {}_{3}CO_{4}.$$

In the presence of this hydrochloric acid gas, becoming more and more concentrated on the mucous membranes by being absorbed by the moisture covering them, that produces the irritating cough, the acrid odor, and the other unpleasant symptoms described. Herein, perhaps, lies an explanation of the fact that ammonia vapor is of such value as a restorative.

In the much-discussed question of chloroform *versus* ether, one argument much used in favor of chloroform was that it was safer to administer in the presence of a naked flame, because ether vapor was so highly inflammable and chloroform vapor was not, and it has been urged that chloroform but rarely tends to cause bronchitis. But in the presence of a naked flame, chloroform has special dangers at the time, as now shown, and the after-effect bronchitis no rarity.

These difficulties have only once, so far as I know, been referred to in this country, and that was by Dr. Paterson, of Cardiff, in a paper on this subject, published in the *Practitioner* for June, 1889.

Abroad, Professor Zweifel records cases of somewhat similar difficulty arising in rooms illuminated by oil-lamps, showing that it is no peculiarity of a gas-flame, but that the only essentials are the presence of chloroform vapor in the atmosphere which feeds a naked flame.

The conclusion that the writer draws from these observations is that an ideal operating-room should be one heated by hot-water pipes or an open grate, and lighted by means of the electric light, or some other mode not involving the presence of a naked flame, or if a naked gas-flame must be used, the room should be as large as possible, and the ventilation free, in order to dilute the products of decomposition.

The following are notes of some simple experiments confirmatory of the above statements:

1. Blow chloroform vapor through the flame of a spirit-lamp,—(a) a pungent odor; (b) a white cloud around the neck of an unstoppered bottle of liquor ammoniæ exposed in the neighborhood of the spirit-lamp. This cloud is chloride of ammonium.

# $NH_{\star}HCl = NH_{\star}Cl.$

- 2. Blow chloroform vapor through the flame of a spirit-lamp against moist blue litmus-paper,—the litmus-paper turns red, showing the presence of an acid.
- 3. Blow chloroform vapor through the flame of a spirit-lamp against moist starch-iodide paper,—a negative result, no blue reaction, and therefore no free chlorine.
- 4. Finally, blow chloroform vapor through the flame of a spirit-lamp against a plug of cotton-wool moistened with distilled water,—pungent fumes arising from the cotton-wool, and the water expressed from the wool gives powerful acid reaction, and a white precipitate when added to a solution of nitrate of silver.. This gives all the reactions of chloride of silver.

In addition, however, in order to show that the conditions in these experiments fairly represent what takes place in the gas-flame, let any one who has administered chloroform in the presence of a naked flame, hold a piece of moist blue litmus-paper for a few seconds over the flame immediately after the operation, and it will be found to turn red. This will not occur except when chloroform vapor has been set free in the room.

These few experiments are sufficient to show that chloroform in the presence of a naked flame decomposes with the formation of a large quantity of free hydrochloric acid.

# TREATMENT OF MALARIA BY METHY-LENE BLUE.

HUDDLESTON reports in the *Medical Record* for August 13, 1892, the results obtained by him in the treatment of three sisters, aged ten, seven, and five years, who were suffering from tertian malarial fever. The chill was severe enough to cause general shaking and chattering of the teeth, and occurred usually at 9 A.M., being followed by a fever and a sweat.

The children were Russian Poles. The characteristic hæmatozoön was found in the blood of the older child, but not in that of the others.

Methylene blue was administered in the dose of 11/2 grains in capsule every three hours to the oldest child. To the one aged seven, every four hours; to the one aged five, every five hours. This treatment was continued regularly for four days, except that the medicine was not given at night when the children were asleep. The temperature was taken at noon daily, and continued normal, excepting on the second day, when the second child had a temperature of 100° F., with no other symptom. The urine, colored blue, was passed without any difficulty, and in sufficient amount in every case. Examination of the sediment gave a negative result. All medicine was stopped after the fourth day; the blood was again examined and nothing abnormal noted. Since then there has been no relapse.

## EUROPHEN AND EUROPHEN-ARISTOL.

In the *Medical Bulletin* for September, 1892, Dr. J. V. SHOEMAKER contributes an article upon this subject.

In the case of a middle-aged woman, who came to him suffering from a typical example of the second stage of rosacea, and in whose skin the injected capillaries could be seen as bright red lines, he ordered the following lotion:

R Europhen, zii; Glycerin, zi; Spiritus odoratis, fzii.

He has also found very considerable amelioration attendant upon the use of an ointment of europhen of the strength of 10 to 20 grains to the ounce in cases of erysipelas. In acute vesicular eczema, europhen powder, combined with subnitrate of bismuth, has reached the inflammation, absorbed the serous exudation, allayed the heat and itching. A case of chronic eczema, affecting the hands and feet, was cured by the persistent use of an ointment consisting of one drachm, finally increased to two drachms, of europhen to an ounce of lanolin.

In similar cases the powder composed of europhen-aristol proved of service. Probably this powder for the majority of cases is more suitable than the europhen alone.

# THE USE OF SALINE CATHARTICS FOR DIAGNOSTICATING INTESTINAL OBSTRUCTION.

While many rules are laid down in textbooks as to the diagnosis of this serious condition, practical experience shows that it is a condition not readily diagnosticated. In an article in the Journal of the American Medical Association for August 13, 1892, Dr. HENRY H. MUDD, of St. Louis, summarizes the matter as follows:

- 1. There is legitimate reason for the most skilled diagnostician to be in doubt in some cases of intestinal obstruction.
- 2. The differential diagnosis rests ordinarily between colic, peritonitis, and obstruction.
- 3. Laparotomy is accepted as the most reliable therapeutic measure for the relief of intestinal obstruction.
- 4. Laparotomy, to be a good therapeutic agent, must be performed early in the existence of the obstruction.

Pain and vomiting occur in obstruction; yet these conditions are present in constipation, in intestinal colic, and in many diverse conditions.

What are the effects of a saline cathartic on the three conditions above mentioned,—viz., colic, peritonitis, and intestinal obstruction?

Colic.—It will purge a case of colic, and a sedative then cures it.

Peritonitis.—It may arrest a peritonitis.

Obstruction.—It will develop and make plain the more serious condition of a mechanical obstruction. If given early in the case, the distress and aggravation of the symptoms, which it arouses, will subside under the use of morphine, and the general condition will then permit operative relief.

It is only where the doubt is sufficiently strong to control action that the saline purgative is used. It should be promptly given. The time for its efficient administration is in the lull or quiet induced by the first dose of morphine. It may again arouse ineffective and painful peristalsis, but it will in many cases resolve doubt, and determine surgical interference when it is still possible to save the patient.

If the diagnosis of obstruction is clear, there is no excuse for a purgative. No one would attempt to relieve an intussusception, a hernia, a volvulus, or a stricture by a purgative. They aggravate and make more urgent every symptom which attends the condition. Yet this is a good reason to administer a saline cathartic in the beginning of many doubtful cases as a diagnostic measure.

A purgative in intestinal obstruction is an unmitigated evil in its effects upon the strangulated loop and the patient. It should not be given unless it is for the benefit of the surgeon and to purge our minds of doubt. But it seems to me that the great uniformity with which cases recover from the primary depression and collapse which so frequently announces the on-

set of intestinal obstruction, indicates to us the possibility of using a purgative as a diagnostic agent rather than an exploratory laparotomy in the earliest hours of the disease. If the peristalsis which inevitably sooner or later declares itself, and convinces the most sceptical patient and the most obtuse physician that the obstruction is pronounced and absolute, is promptly aroused by a saline cathartic given before the destructive changes have occurred, and before the vitality of the patient has been exhausted, the action thus aroused will again subside under the use of opium (morphine), and the depression which is occasioned by its use will disappear, leaving an open field for the surgeon.

Laparotomy has rapidly grown in favor as the most reliable therapeutic measure for the relief of intestinal obstruction, if resorted to early in its existence. Surgeons sometimes conceal their ignorance by "explorative laparotomy." Exploratory laparotomy, where symptoms of intestinal obstruction are present, may lead to the prompt recognition of the condition and its cure; but it is a dangerous proceeding where meteorism is present, circulation feeble, and inflammation already existent. These conditions may exist without mechanical obstruction and without the existence of a condition amenable to operative measures. I believe we can avoid some of these useless operations and save many patients by promptly resorting to the less dangerous saline cathartic. It will be admitted when laparotomy would not be considered. It will eliminate doubt, and enable the physician and surgeon to intelligently urge a prompt resort to the efficient treatment necessary to relieve an obstruction,-viz., lapar-

If it has been determined to perform laparotomy, the cathartic is, of course, not to be considered. If, however, there is a case anxiously and carefully considered for twenty-four hours (an arbitrary but not a standard time), and grave doubt is still present concerning the condition, an efficient saline cathartic (Epsom salts), followed by an enema, may solve the doubt. It should be remembered that the saline cathartics are dependent upon a fair amount of fluids in the body for their efficient action, and if they are given after a patient has been for a number of days without imbibing fluids, they will not act. The paralysis which attends intestinal inflammation will also interfere with their action.

Will you, in a doubtful case, if presented within forty-eight hours of the onset of the trouble, wait, and let time resolve the doubt and destroy your patient, or make an exploratory laparotomy on a patient who does not need it? It appears to him that a purgative is the third and safest method of solving the doubt.

The free, spontaneous action which follows relief from an obstruction, whether by nature's unaided effort or by surgical interference, not infrequently produces such a collapse that death follows. Death may be precipitated by cathartics, if used when obstruction has existed for any length of time; but it cannot be said that they cause it, for the obstruction surely determines conditions which finally excite the peristalsis, collapse, and death, and the longer the peristaltic action is delayed the more dangerous it is.

Intestinal obstruction may exist for days without developing any more positive signs of its presence than we frequently see in obstinate constipation, with its attendant pain, sick stomach, meteorism, and prostration. It is for these doubtful cases that Dr. Mudd urges as a conservative measure the administration of a saline cathartic. The modern physician will admit that there is legitimate reason for doubt in the diagnosis of at least a small percentage of cases of intestinal obstruction in the early stages of their development.

# PRACTICAL POINTS IN THE TREATMENT OF SOME COMMON DISEASES OF THE EYE.

W. C. BANE (New York Medical Journal, November 12, 1892) discusses a number of the more common diseases of the eye and their treatment. In blepharitis he recommends correction of refractive error, proper food, change of air, touching the ulcers of the lids, if they are present, with tincture of iodine or carbolic acid, preceded by a ten-per-cent. solution of cocaine and followed by an oil. Yellow.oxide of mercury is lauded as a local remedy, but the author thinks that an ointment two and a half grains to the ounce is sufficiently strong, and that mutton-tallow, or lanolin, is a better base for this ointment than petrolatum. Aristol is recommended for the same purpose. tenular conjunctivitis the catarrhal secretion from the mucous membrane requires treatment. and excellent directions for good food and hygiene follow. Calomel in 16-grain doses, three times a day, is recommended, and the usual remedies for scrofulous diathesis. Locally the application of water as warm as can be borne is ordered, and five grains of the chlorate of potassium to the ounce of water is directed to be applied with a dropper or fountain-syringe

directly into the ulcers. Pyoktanin is recommended in dacryocystitis, but if there is a tight stricture, Bane advises that it be freely slit with an Agnew knife or its equal. In suitable cases of trachoma Knapp's forceps is preferred.

# EXTRACTION OF CATARACT WITHOUT IRIDECTOMY.

O. D. Pomeroy (New York Medical Journal, November 12, 1892) records fifty cases of extraction of cataract without iridectomy. He uses bichloride of mercury, 1 to 10,000, for bathing the eye freely before the operation, and uses it with some freedom during the oper-The instruments are immersed in boiling water. Cocaine is used in a four-per-cent. solution, several instillations being made before the operation, sufficient to cause about halfdilatation of the pupil, which, in the opinion of the operator, lessens the risk of wounding the iris during the passage of the knife across the anterior chamber. The spring speculum is rarely employed, the upper lid being raised by the fingers of an assistant or with a lid-elevator. A rather broad Graefe knife is always chosen, and in making the section an imaginary equilateral triangle is laid on the cornea with the base upward. The puncture and counter-puncture correspond to the two upper angles of the triangle. The knife enters about midway in the limbus and emerges at a corresponding point on the opposite side. The section terminates at the margin of the sclera above, as nearly as possible, although in some cases by an effort to avoid the iris the incision may extend too far in the clear cornea. The latter condition favors anterior synechiæ. The capsule is lacerated with the Graefe cystotome near the centre of the lens, care being taken to avoid the upper periphery for fear of lacerating the iris or rupturing the zonula. The lens is delivered by means of a Daviel's or Bowman's spoon, one being placed in the sclera above and the other on the lower portion of the cornea. Difficulty in removing bits of lens-matter after the iris is returned to its proper position is avoided by delivering the broken-up lens-matter while the body of the lens is still in passage—that is, before the iris has returned to its position—by a stroking movement of the spatula on the cornea until the pupil appears black. This may be accomplished at about the time the body of the lens is extruded through the eye. Afterwards the eye is thoroughly irrigated with a bichloride solution, and eserine (one grain to the ounce) is instilled, although Pomeroy does not feel certain of its value in preventing prolapse of the iris, but feels sure that it does not produce iritis. A sterile binocular bandage is applied. The eye is not disturbed on the following day if, after the removal of the dressing, no untoward symptoms are apparent. Atropine is used after three or four days.

# THE TREATMENT OF SYMBLEPHARON BY A NEW OPERATION.

DR. ROGMAM (Archives d'Ophthalmologie, October, 1892) describes his method of treating symblepharon as follows: The operation is divided into two portions.

First Portion.—After having cut the adhesions formed by the symblepharon, so as to create an artificial cul-de-sac possessing at least the depth of the natural conjunctival fornix, a quadrangular flap of skin is cut from the cheek the size of the eyelid, having its apex below and its base adhering to the skin of the eyelid on a level with the bottom of the fornix. Then raising the flap of skin, an opening is made in the subjacent wound, removing the tissues on both sides of the cul-de-sac which has been made. The flap is then slipped across this opening, the apex of which is fastened by suturing the length of the internal palpebral brim. The eyelid will then present the appearance of a large arc, adhering only at the nasal and temporal sides, entirely free towards the middle, and covered on its anterior and posterior sides and at its edges with a cutaneous covering. The operation is finished by drawing together laterally the edges of the wound from which the flap of 'skin has been taken, making, in case of need, especially above, several free incisions.

Second Portion.—Three or four weeks later, when one has reason to believe that the applied flap of skin at the posterior side of the eyelid has formed sufficient adhesions, and is supported in a suitable manner, a second operation is un-The ocular surface of the conjunctival cul-de-sac which was formed at the first operation is freshened anew, and any cicatricial traces which may be formed between the ocular globe and the external wound are destroyed. At the same time the inferior opening communicating with the cul-de-sac is enlarged by lateral incisions in case it is contracted. Making, then, a horizontal incision towards the middle of the anterior side of the palpebral arch, and along its entire length, the skin is dissected above and below towards the inferior edge of the arch, to which it continues to adhere, and the flap thus formed is drawn, by reversing it. into the cul-de-sac. The apex is attached by two stitches of suture to the ocular globe near the corneal brim. If the case is suitable, the edges of the external wound are also joined.

The operation which has thus been described, according to the author, recommends itself (1) by the simplicity and facility of its execution; (2) by the certainty of its results and by the ease with which the mode of operation permits of the formation of a complete artificial cul-de-sac, in which the ocular wound, as well as the palpebral wound, is provided with a tegumentary covering, supported by its free surface and connected in the rear.

## THE COMBINED IODIDES IN THE TREAT-MENT OF SYPHILIS, ESPECIALLY OF THE NARES.

In the July number of the Revue de Laryngologie, d'Otologie, et de Rhinologie, DR. G. DARZENS advocates a combination of the iodides of potassium, sodium, and ammonium in cases of urgent specific disease where the prompt effect of the iodide is highly desirable. In a man of thirty-seven, with severe syphilitic lesions of the nasal fossa, who had been vainly treated by large doses of iodide, as well as other antisyphilitic remedies, he gave small doses of each of the three iodides and biniodide of mercury, and obtained a most satisfactorily rapid impression without iodism or other unfavorable symptoms. He explains the result upon the idea that the other salts are eliminated more rapidly and the potassium iodide thus retained in the system until the others have disappeared, claiming that the kidneys excrete a limited proportion of any such salt and tend to retain the urine at approximately the same specific gravity. The intolerable headaches disappeared in a week, and the nasal lesions and dacryocystitis were practically cured in six weeks.

## THE TREATMENT OF OBSTINATE SUP-PURATIONS OF THE MAXILLARY SINUS.

DR. CARTEZ deals with this subject in the September issue of the Archives Internationale de Laryngologie, etc., touching first upon the diagnostic signs, and stating his doubt of any sure means of early recognizing the cases difficult or impossible of cure by mere irrigations. He accords high value to the electric lighting from the mouth (as does Davidson, in the Berlin. Klin. Woch., July, 1892, pp. 665 and 697, who insists especially upon the penetration of the illumination to the eye as the real evidence of freedom of the antrum), and believes it is

pathognomonic if properly employed. He cites the two cases which he has met which had proved rebellious to irrigations, without noting how much experience of the other kind he had had and the proportion which these two represent. In each, former treatment by himself or others had given amelioration only; so he opened the sinus freely from the alveolar border, studied the interior by means of an inserted electric light, and dealt surgically with the morbid conditions within by dividing septal bands, removing and curetting away diseased lining membrane when "pyogenic" in character, all outgrowths. In each case early cure was obtained, which has now persisted a year or more in evidence of its permanence.

## AURAL AND NASAL STUDY OF FOUR HUN-DRED AND FIFTEEN DEAF-MUTE CHILDREN.

In the Medical News of November 19, Dr. A. A. Bliss gives some data of his investigation of the ears and upper air-passages of the pupils of the Pennsylvania Deaf and Dumb Institution. Much of interest and importance is given in his report, although much is reserved for detailed publication later; but the point of special importance is his showing as to the conditions of the vocal organs, both in the group of children under training by the exclusively oral method, and in the smaller group of oral failures who had proved unable to profit by this method of instruction. Reason for the failure was almost invariably found in the organs of phonation, proving that careful choice for such teaching ought always to be made of children with appropriately well-developed voice-apparatus, and not of those so defective in this respect that success is impossible. Among those now under oral instruction there were far too many heavily handicapped in their efforts by lesions more or less readily corrigible. The showing as to the frequency of acquired forms of deafness is also interesting, and leads naturally to the thought that not a few of these children might be restored to useful hearing by mobilization of the stapes or other modern operative methods.

# HONEY AS A TOPICAL DRESSING FOR PAR-AURICULAR ABSCESS.

In the October Monatschrift für Ohrenheilkunde, ZIEM advocates this piece of domestic medication as having served him admirably in this and many other forms of phlegmonous inflammation. The failure of the method in other hands he ascribes to carelessness in its application, and advocates the mixing of a spoonful of the unrefined honey with as much rye-meal, applying the paste, thickly spread, to the inflamed surface, and covering with a thick, impermeable dressing. In five or six hours it should be removed with soap and water and renewed. Resolution or pointing is apt to be prompt; and the abscess, opened spontaneously or by incision, is dressed with the same mixture. He ascribes its action partly to the hydroscopic • effect of the sugar, but accords some value to the contained peculiar acid ("amaisensaure").

### PERMANGANATE OF POTASSIUM IN THE TREATMENT OF GONORRHŒAL OPHTHALMIA.

ALBERT TERSON (Archives d'Ophthalmologie, October, 1892), without wishing to discard standard measures of treatment, has applied this drug to a series of purulent ophthalmias. His researches have been particularly in connection with gonorrheal ophthalmia of adults, but he has also treated the purulent ophthalmia of a little girl infected from a vulvitis, and purulent ophthalmia in two infants. The effect upon the chemosis and secretion of pus was decided and evident. The irrigations with permanganate of potassium are not painful. They result in transforming the purulent flow into a serous discharge and freeing the palpebral cedema from its characteristic lardaceous constitution. Corneal troubles have never been produced by this remedy, although in some instances they were present before it was employed. He does not wish to assert too much, but, without omitting anything from the complete treatment which is now being adopted, and especially without neglecting any part of the treatment for the first hours when the ophthalmia is still very active, he believes that there is real use in adding permanganate of potassium to the treatment. The drug is entirely inadequate if its solution is applied by the patients themselves, or even by the physician without proper measures.

The irrigations must sweep out the culs-desac and the conjunctival surface of the lids, and for this purpose the perforated lid-elevators are important. He employs a solution of 1 to 2000 or 1 to 5000, according to the date and extent of the disease. An irrigation composed of ½ litre or more should be made every eight hours, night and day. The slightly violet coloring which is communicated to the skin of the face and the hands of the operator is removed with a solution composed of bisulphite of sodium, 2

grammes; water, 100 grammes; hydrochloric acid, 4 drops.

In closing he reiterates that he does not wish to reject any of the traditional treatment, but pleads for the addition of permanganate of potassium to the other measures.

# THE TREATMENT OF HERPES OF THE CORNEA WITH PYOKTANIN.

GALEZOWSKI (Recueil d' Ophthalmologie, September, 1892) refers to the successful effect of pyoktanin upon herpetic ulcers of the cornea, which he has administered in a number of cases, especially in cases where all other means were without result. The case which follows serves as an example.

A woman, aged twenty-eight, came to the clinic on February 23, 1891. She complained of acute ocular pain, which had begun suddenly, and had been preceded by sensations of heat, insomnia and photophobia; chills and fever accompanied these pains, which had their seat in the right eye. An ulceration, oval in form, occupied the centre of the right cornea, and the eye upon this side was greatly injected. The sudden development of the disease, with cephalalgia, sore throat, chills, etc., led to the diagnosis of herpes. Locally atropine drops were prescribed, together with a sublimate lotion, and internally full doses of sulphate of quinine. At the end of several days there was no amelioration of the symptoms. Leeches were then applied to the right temple, but again without result, when recourse was had to a collyrium of pyoktanin instilled into the eye four or five times a day in the following form:

> Pyoktanin, 10 grammes; Distilled water, 10 grammes.

The following day there was evident improvement. At the end of the first week the vesicles were found to have diminished and the pericorneal injection to have disappeared, and at the end of about a month there was only a little light opaque spot which did not interfere with vision.

## SCLERITIS, IRITIS, AND DIFFUSE KERA-TITIS.

Dr. VAN MOLL (Klin. Monatsbl. f. Augenheilk., October, 1892), discussing the topical treatment of ocular diseases not especially concerned with the superficial tissues of the eye, comes to the following conclusions: Irrigation of the eye with lotions of salicylate of sodium produces good results in episcleritis, but not in kerato-scleritis and diffuse keratitis; conse-

quently it should be reserved for the milder forms of episcleritis. Subconjunctival injections of sublimate are excellent in many of the cases of iritis and irido-cyclitis, and good results follow their use in diffuse keratitis. Mydriatics, however, must not be omitted, and when syphilis, rheumatism, etc., are present, general therapeusis is necessary. Injections of salicylate of sodium, without doubt, secure happy results in scleritis and in the lighter forms of diffuse keratitis. Great care must be taken in sterilizing the injection, and, as in some cases it is difficult of application, it is reserved for those where the ordinary methods of treatment have been inefficacious.

# ON THE USE OF COCAINE IN OPERA-TIONS ON THE EYES.

BARRAQUER (abstract in Recueil d'Ophthalmologie, September, 1892, p. 551) employs a five-per-cent. solution of cocaine in the extraction of cataract without iridectomy. When iridectomy is performed he makes a subconjunctival injection of several milligrammes of cocaine in the neighborhood of the incision of the iris, and by this means renders the operation painless.

# KERATOCONUS TREATED WITH THE GALVANO-CAUTERY.

KNAPP (Archives of Ophthalmology, October, 1892) describes five cases of keratoconus treated with the galvano-cautery. method is as follows: The eye is cocainized, a fine wire loop, brought to a red heat, is passed over the apex of the cone in an area of several millimetres, and the centre is then perforated. The aqueous spurts forth in a jet, and the patient is obliged to remain in the hospital for some There may or may not be considerable inflammation, and anterior synechiæ may form. It is not always wise to make so extensive an application of the loop to the cornea, but sometimes the point of the electrode is applied repeatedly to the centre of the wound until the aqueous just oozes out. The reaction and the subsequent scar are proportionate to the extent of the cauterizations. In experimental inquiry moderate burnings, with or without perforation, heal kindly and leave circumscribed scars.

Extensive and prolonged cauterizations lead to iritis, suppuration, and sloughing of the cornea. Knapp closes his paper with the following remarks: "Galvano-cautery at the present time appears to be in greater favor than any other method, yet, like all other procedures, it has great dangers. If the cauterization is only superficial, or consists in a mere perforation of the

apex, it is insufficient and has to be repeated. If the cauterization is deep, especially with a large perforation, the closure is slow, and the inflammation and its consequences may be more or less severe, including sloughing of the cornea. Anterior and posterior synechiæ are not infrequent, and may require an iridectomy, which also for optical purposes may be desirable in some cases. Cauterization which acts by the contraction of the cicatrix seems to be the safest method."

# A CASE OF THIERSCH'S SKIN-GRAFTING OF THE ENTIRE CAVITY OF THE ORBIT.

W. von Noorden (Berlin. Klin. Wochenschr., No. 41, 1892) describes a case in which there was a carcinoma of the temporal region, eyelid, and eyeball. The entire growth, together with the lids, was excised, the eyeball enucleated, and complete evisceration of the contents of the orbit was performed. Later, a transplantation of epidermis—after the manner of Thiersch—over the entire area of the wound was done. The healing was complete, and at the end of a year there had been no return of the growth.

## COAL-MINERS' NYSTAGMUS AND ITS TREATMENT.

M. Romit (Annales d'Oculistique, October, 1892) discusses the subject of nystagmus as it is seen among coal-miners, and recommends the following treatment: Three to five milligrammes of the sulphate of strychnine daily, and the instillation, three times a day, of 1 drop of the following collyrium:

Sulphate of eserine, 3 centigrammes; Distilled water, 10 grammes.

One drop is instilled into the eye upon rising in the morning, one upon returning home, and one at bedtime. Sulphate of atropine, which also produces evident improvent, is an inconvenient application, especially in hypermetropic individuals. Those who employ this treatment declare, even when work is not suspended, that they are annoyed less and less with their complaint, and the nystagmometer indicates evident improvement in the oscillations of the eyeballs.

## PROMPT CURE OF LONG-STANDING DEAF-NESS BY THE COMPRESSED-AIR BATH.

The September number of the Revue de Laryngologie, d' Otologie, etc., contains an enthusiastic paper, by HOVENT, of Brussels, nar-

rating and extolling the effect of immersion in the compressed-air cabinet on a girl, of thirteen, long deaf, and vainly treated by numerous distinguished aurists of Belgium, France, and Germany. Her first bath was accidental, merely as companion of a patient,—but the effect was so good that further treatment was pressed, in spite of the hopeless opposition of the mother. Aural data are apparently ignored, and the results with the watch-test alone given; but the claim is made, with apparent force, that the hearing for conversation, as for the watch, returned to the normal in ten days, and was instantly regained when—on later cold-taking relapses occurred. The history states that marked gain had followed removal and reduction of the hypertrophic tonsillar tissues of fauces and vault, with persistent catheterization at Bayer's hands; but all had been speedily lost, and no gain had followed later treatment. reports as to the effect of compressed air upon deafness, which have appeared from time to time ever since the invention of the divingbell, are cited, and a long theoretical dissertation given as to the counter-indications and the therapeutic effects in general. It is of unfortunate omen that no further cases have apparently been favorably treated in the six months following this brilliant result, and that the author gives no details as to the pressure, etc., except to state that it differs essentially from that employed in other affections. Yet careful and persistent use of the measure may be well worth ' trial by those having the apparatus at command, undeterred by the known fact that no notable or lasting benefit has followed the occasional employment of it by competent observers in the past.

# STERILIZATION OF SOLUTIONS OF ATRO-PINE, ESERINE, AND COCAINE, AND A DESCRIPTION OF A NEW PIPETTE.

DR. E. STROSCHEIN (Archiv für Ophthalmologie, vol. xxxviii., Abt. 2) describes his method of sterilizing solutions of the alkaloids commonly used in ophthalmic practice, and also the apparatus with which he accomplishes this. He has had constructed blown glass bottles and suitable droppers. The bottles may be directly exposed to the flame and the contents of them rapidly sterilized. The pipette has two conical surfaces, and may be introduced into the neck of the bottle with the point upward. Before reversing the pipette the rubber hood must be removed. If the collyria are to be boiled, the small tube must be reversed so as to give free vent to the steam, which, passing out by the pointed end of the tube, sterilizes it at the same time. Experiments have shown the author that the collyria need to be boiled for only two or three minutes to render them perfectly sterile. The point of the tube which is directed upward during the ebullition likewise becomes sterile. The loss of water which is produced by an ebullition of three or four minutes over a Bunsen burner is about one cubic centimetre. If concentration of the solution to be sterilized is to be avoided, fifteen drops of water must be added before the ebullition.

THE TREATMENT OF INTERSTITIAL KERATITIS WITH SUBCONJUNCTIVAL INJECTIONS OF CORROSIVE SUBLIMATE.

Dr. Felix Lagrange (Recueil d' Ophthalmologie, September, 1892) contributes two observations on interstitial keratitis treated with subconjunctival injections of corrosive sublimate.

The first was a woman, aged twenty, who consulted him in May, 1892, on account of a keratitis of the left eye, which had begun on the 10th of the preceding March. There were indications of inherited syphilis. The ordinary treatment of this affection up to the first days of May had produced little or no results. When Dr. Lagrange saw the patient—on the 10th of May—the opacity of both corneas was complete. Yellow precipitated salve aggravated the symptoms. The previous treatment of atropine, iodide of potassium, etc., was continued, in addition to which subconjunctival injections of corrosive sublimate were given. Eight drops were injected on each side around the cornea, with the usual preparatory cocainization. Four days later the symptoms began to improve. On the 20th of May the injection was repeated. By the 1st of July there was almost complete recovery, and at the end of July the patient could resume her ordinary occupations. Emphasis is laid upon the general treatment, and the query is raised whether the latter, if it had been continued long enough, would not alone have brought about the cure. It is admitted that the subconjunctival injections were perhaps only auxiliary to the specific therapeutics, yet they greatly shortened the duration of the disease, and hence are recommended.

A second case of monolateral interstitial keratitis, treated with subconjunctival injections without improvement, is contributed. This patient also received treatment with mercurial inunctions and iodide of potassium, and on a number of occasions subconjunctival injections of the sublimate solution. The general condition of the patient was only moderate. It was

not possible to prove syphilis in her case. The failure is attributed to the bad general nutrition,—a failure which was present alike with general medication and with the subconjunctival injections. Lagrange inquires whether it is not likely that the keratitis must be specific in origin in order to obtain the best results.

# REMOVAL OF A CALCULUS WEIGHING FIVE OUNCES.

GAY (Boston Medical and Surgical Journal, vol. cxxvii., No. 6) reports the case of a man, aged forty-three, who for several years suffered from renal colic. These symptoms were followed by the development of tumor in the right side. This gave all the physical signs of pyonephrosis.

On incision, the kidney was found to have been converted into a large, thin-walled cyst, containing between one and two pints of a thin, turbid fluid. A stone was taken out and the cyst-walls were stitched to the external wound. Eleven days after the operation the patient was seized with acute pain in the left hypochondrium. This passed off, however, and did not recur. The calculus removed was seven inches in circumference and two and three-fourths inches in diameter; it weighed five ounces. It was composed chiefly of phosphate of lime and a small amount of carbonate of lime and triple phosphates. Five months after the operation the patient was fat and ruddy and was attending to business. The wound was closed with the exception of a small sinus, the size of a probe, giving a discharge so slight that it occasioned no trouble.

Baum's table of cases issued in 1888 contained a total number of fifty; eight were fatal and forty-two recovered more or less completely.

Whitney has collected the cases recorded in English and American literature since 1888; sixty-eight in all were tabulated; fifty-eight recovered and ten died.

The largest number of calculi found in one kidney was one hundred and fifty. In one of Morris's cases, fatal from septicæmia, two hundred calculi were found in the kidney at the autopsy. One of the most striking cases is that of a woman, thirty-seven years of age, who had suffered from hæmaturia for seventeen years and pain in the right side for nine years. She had a tumor in the left side for seven years, which was supposed to be a floating kidney. Her right kidney was removed in July, 1885. It was found to be a mere shell containing calculi weighing twenty-one ounces. After four months of comfortable existence she was seized with

severe pain in the left side, followed by complete suppression of urine. This state of affairs continued for four days and over. The left kidney was then opened, the ureter found plugged with a small stone, which was removed. The wound healed in ten weeks. The woman was in good health and doing her work five years after the operation.

The author states that early diagnosis and early removal of the stone are two most important elements in the successful management of renal calculi.

Repeated attacks of renal colic, with long continuance of purulent or bloody urine without evidence of sufficient disease in the lower urinary tract to account for these symptoms, point strongly to a renal calculus. Yet under similar conditions, as reported by Treves, the kidney has been opened about thirty times, and no foreign body was found.

# THE TREATMENT OF ULCERATION OF THE RECTUM.

GIBBS (New York Medical Journal, No. 712), having observed a number of ulcers of the rectum running exceedingly chronic courses, occurring without definite cause in otherwise healthy persons in whom there was no constitutional taint, states that, in opposition to the commonly accepted theory, ulcer of the rectum is generally simple in character, is due primarily to local injury, and is chronic on account of the varicose condition of hemorrhoidal veins. He ingeniously compares these ulcers to those which are observed upon the leg. Since such ulcers cannot be treated as are leg ulcers, by strapping and bandaging, he advises the next best thing,—that is, rest in bed in the recumbent position.

The ulcers are usually situated posteriorly, and are one to two inches from the anal verge. The muscular coat is seldom penetrated. Such ulcers, however, occasion an amount of pain and disability by no means commensurate with their size, and, moreover, they are liable to become aggravated beyond the reach of simple surgery.

As a means of stimulating sluggish granulations curetting through a speculum is advised, and when, under the effect of prolonged rest, an ulcer has closed down to a small spot which obstinately remains open, a fistulous tract must be searched for, and if present must be laid open.

Stretching the sphincter is futile, since the paralysis aimed at wears off in a few hours. The only effective way of putting the parts at rest

long enough to do any good is the careful use of the knife. The best method is to make an incision longitudinally through the base of the ulcer deep enough to sever the circular muscular layers underlying. This cut, unless very superficial, should be continued through to the anus for the additional purpose of securing drainage, thereby avoiding the unquestioned danger of periproctal cellulitis. As cicatrization gradually takes place, applications of nitrate of silver (gr. x-lx to the ounce) once or twice weekly are advisable.

A cure of a moderately large ulcer in two or three months is as much as can be hoped for. In the deeper forms of ulceration, resection of the whole area of disease, the knife being carried through the thickness of the gut, combined with linear proctotomy, is most applicable. When the ulcer is spread over the whole area of the rectal pouch the injury is irreparable. Pain, sleeplessness, reflex disturbances of the whole digestive tract, wear down the general strength with the rapidity of a cancer.

Local treatment is simply a waste of valuable time which can never be regained. There are two surgical alternatives: first, resection of the rectum, with suture of the divided ends of the intestine; and, second, colotomy. Resection is severe, bloody, often desperate, so much so that its risks may be prohibitive.

Colotomy, on the contrary, is bloodless, safe, and rapidly performed, and is, according to the author, attended with subsequent comfort and satisfaction on the part of the patient.

# INTUBATION VERSUS TRACHEOTOMY.

LOVETT (Medical News, vol. lxi., No. 9) finds, as a result of the statistical study of 858 cases of diphtheria operated on at the Boston City Hospital, that of 327 cases of tracheotomy, 232 died and 95 recovered, making a percentage of 20.05 per cent. Of 302 cases of intubation, 312 died and 80 recovered, making a recovery percentage of 20.41 per cent. Twenty-one times intubation was attempted, and immediate tracheotomy was necessitated by prompt cessation of breathing. Of these cases, only two recovered. In three cases death occurred during attempts to insert the tube. In two cases the tube was drawn into the bronchus and death of course resulted. In two insertion of the tube was followed by convulsions. In two the introducer broke during the operation. As a result it seems clear that the death-rate of intubation is nine per cent. higher, and that the accidents during intubation are much more common.

Of 42 patients under two years of age on whom tracheotomy was done, only three recovered, while of 123 cases in which intubation was performed on children under two years of age, >4.63 per cent. recovered.

Tracheotomy in these very young children is liable to be a difficult operation, and, although intubation is by no means easy in these small mouths, it is preferable to tracheotomy in children under two years of age. In children between two and three years the question would be debatable. It is often said that intubation can be followed by tracheotomy. The author pleads for the early performance of tracheotomy if it is to be done at all. Of one hundred and twenty-seven cases of secondary tracheotomy, fifty-seven of these being from the Boston City Hospital, but ten recovered.

The author concludes from these figures that intubation is not so favorable as tracheotomy. The chief reason for this appears to be twofold. Intubation does not afford such good drainage to the trachea, and only a limited amount of nourishment can be taken by the intubated patient.

INTRAVENOUS INJECTION OF "NORMAL" SALT SOLUTION FOR THE GRAVE HEMORRHAGES OF MIDWIFERY.

Spencer (Lancet, June 18, 1892) reports eight cases of hemorrhage treated by injection of normal salt solution. Of the eight cases, four recovered and four died. Of those that died two (cases of accidental hemorrhage) are of no value in estimating the effects of the treatment, for in one case the patient was in a hopeless condition and in the other was practically dead; both died when a few ounces had been injected. Of the other two cases, one had an extensive laceration of the lower segment of the uterus and a hæmatoma of the broad ligament, and died rather from shock than loss of blood; the other (a case of central placenta prævia) had also a lacerated cervix, and might possibly have recovered if a second injection had been made. Of the cases that have recovered, two were examples of adherent placenta, with post-partum hemorrhages, and two were cases of accidental hemorrhage; one of these women died in her next labor from a repetition of the accident. In two patients the operation was performed a second time, making six successful operations in all. eight cases bear but a small proportion to the number of cases treated for hemorrhage. ing the last five years the author endeavored to see all cases of acute ante-partum and all grave cases of post-partum hemorrhage occurring in the hospital maternity. Of the former alone (excluding miscarriages) he saw about one hundred cases, including forty cases of placenta prævia. Many patients were almost pulseless and in a serious general condition after the loss of large and small quantities of blood; twice patients recovered without transfusion after hemorrhage so severe as to cause convulsions; all except the eight reported cases recovered with the ordinary remedies, and in no case was intravenous injection resorted to until the ordinary methods of treatment failed.

Before performing the operation the bleeding should be definitely controlled. The apparatus employed for the purpose of injecting the fluid consists of a glass bottle, holding two pints, with an india-rubber stopper, through which pass a thermometer, a thistle-headed tube (for the purpose of replenishing and for the admission of air) filled with antiseptic wool, and a delivery-tube, to which are attached about four feet of india-rubber tubing and a canula made of vulcanite or glass. The apparatus, having been washed with a five-per-cent. solution of carbolic acid and with boiled water, is filled with hot boiled distilled water containing one drachm of sodic chloride to the pint. Instead of using the solid salt, time and trouble may be saved by employing stoppered glass tubes containing two drachms of pure salt in solution. When the bottle is filled, the solution is maintained at a temperature of 105° F. by placing the bottle in a vessel into which hot or cold water is poured from time to time. The solution is made to run by blowing with the mouth through the wool-stoppered tube and raising the bottle about two feet above the patient's arm. A longitudinal slit is then made in the skin over the median cephalic or basilic vein. If assistance is not at hand, it is better to make a transverse slit through a fold of skin, as the elasticity of the skin then makes the wound The vein is isolated, and three fine silk ligatures are passed under it. The lower of these is tied, the vein is picked up with forceps and opened with a scalpel, and, the solution having been set running, the canula is inserted and tied in with the middle ligature. The solution should be allowed to flow slowly, and the bottle should not be raised too high. Thirty or forty ounces will in nearly all cases be sufficient to inject, and the operation should take from twenty minutes to half an hour. In case of relapse the operation may be repeated on the other side. After the operation the canula is removed, the vein tied with the upper ligature, and the wound closed and a back splint applied. If necessary, stimulants may now be administered with greater benefit than before the operation.

In conclusion, the author expresses his belief that the operation properly performed is neither attended by danger nor followed by evil consequences; that it will afford remarkable relief in cases of severe hemorrhage, which are not complicated by "shock," after all the ordinary methods of treatment have failed; and that in the gravest cases of ante-partum hemorrhage it would be well to inject the solution before delivery is effected.

# THE STERILIZATION OF IODOFORM EMULSION.

GARRÉ (Centralblatt für Chirurgie, No. 39, 1802) states that among many hundred cases injected with emulsion of iodoform oil, violent inflammatory reaction, great pain, iodide eruptions, etc., such as have been observed by Dr. Stubenrauch, have never been encountered. The only symptoms excited were occasionally elevation of temperature. The olive oil is sterilized by means of boiling. The iodoform is added after cooling the oil, ten per cent. by The vessel in which the oil is received is previously sterilized by washing with sublimate solution, the bichloride being washed out with ether. The best preparation of iodoform to employ is the fine powder prepared by means of electrolytic action, according to the method of Schering.

Garré is inclined to attribute inflammatory reaction either to lack of sterilization of the preparation or to breaking up of the iodoform in the course of the procedures adopted for sterilization. He states that the use of this emulsion in surgical tuberculosis is so simple and its results so satisfactory that it should be employed not only in every well-directed hospital but also by the general practitioner, hence the simplest method of sterilization is the one most to be commended.

# THE CONSERVATIVE TREATMENT OF JOINT TUBERCULOSIS BY A NEW METHOD.

BIER (Beilage sum Centralblatt für Chirurgie, No. 32, 1891) treated twenty cases of tuberculosis of the extremities on the principle that a passive hyperæmia would not only prevent extension of the disease process, but limit ordestroy the virulence of the tubercle bacilli. He was led to a trial of this method from the fact that passive hyperæmia of the lungs conveys immunity against pulmonary tuberculosis.

Venous congestion was produced in accordance with the method commended by Helferich in the treatment of delayed union of fractures. The extremity was bandaged up to the seat of disease, and above the latter an elastic band encircled the limb. The injurious effects upon the skin, which follow from long-continued pressure of the band, were prevented by placing cotton beneath the elastic ligature and by changing the position of the latter from time to time.

The author states that, as a rule, improvement was surprisingly rapid. In no instances were cases made worse.

# THE MODERN TREATMENT OF TUBER-CULOSIS OF JOINTS.

König (Bericht über die Verhandlungen der Deutschen Gesellschaft für Chirurgie, No. 32, 1892), in a general review of this subject, states that in only one-fifth of all the cases of joint tuberculosis is the local trouble the sole manifestation of disease, so that tubercular arthritis may generally be regarded as a manifestation of metastasis. In so far as the treatment of the local trouble is concerned, this consists in the direct and radical removal of tubercular foci, most thoroughly accomplished by amputation, generally accomplished, though not so certainly, by extirpation of the diseased joint, or by removal of disease foci in the bone, supplemented by vigorous curetting of the soft parts; or in combating of symptoms through intra-articular injections of iodoform; or other treatment, such as rest, extension, etc.

By means of pressure and rest almost onehalf the cases are cured. The proper recognition of the value of this treatment has only been reached as the result of reaction from excessive zeal, which leads to the performance of operations so early that in many cases even a positive diagnosis could not be made.

The coxitis of children is a disease to be handled in this conservative way. The treatment is continued until the joint is painless and is functionally perfect. This often requires from six months to a year. Results are, as a rule, much better than those following resection. When the bone is involved in the process this treatment is often unavailing, and here injections of iodoform-glycerin are found to be most serviceable. The favorable results in many cases are temporary. It is safe to say that about thirty per cent. of cases are cured by injection treatment. It must be borne in mind, however, that the iodoform influences only those tissues with which it is brought in direct contact. If, after four or five injections, no distinct improvement is manifested, the treatment should not be continued. Of four hundred and ten cases of tubercular disease of the hip-joint observed in the last fifteen years, about one-half were treated conservatively. Two hundred and fifty were resected with about nineteen per cent. Resection was practised in cases mortality. which resisted conservative treatment, in cases showing marked tendency to abscess formation and caseation, and in cases where the bone was extensively involved. In a few cases amputation was practised. Where the disease is widespread, suppuration is profuse, and the liver and kidneys are diseased; it is, without doubt, the safest operation.

In ordinary cases resection with extirpation of the capsule was practised. Of 100 resections of the knee-joint practised upon patients between twenty and sixty years, 6 died shortly after operation, 6 within a few weeks, 64 were cured, 16 were not cured, and 8 were subsequently subjected to amputation with good results. In 1888 information was obtained in regard to 70 of the patients operated on since 1876; 44 were still healthy and were able to work; 20 had died, probably of tuberculosis; 6 still suffered from fistulæ.

König believes that extirpation of the capsule alone, without removal of the joint extremities, is an unsafe measure.

Bergmann, in discussing König's paper, formally commended iodoform-glycerin injections. This procedure should give place to operation only in fulminant cases. Of 36 cases treated by injection during 1891, 31 were cured, and only 5 were subjected to operation. Von Bergmann expresses himself as thoroughly in accord with König in condemning early resections.

Küster also expressed himself as well satisfied with iodoform injections. In the last year he performed only three resections. Even if injections are not followed by improvement, it is safe to wait, in patients under fifteen years of age. In older patients, failure of the injection method implies resection or amputation.

Koch (Dorpat) treated, in ten months of the years 1890 and 1891, 367 cases of joint tuberculosis; 100 of these involved the hip-joint; 117 the knee-joint. He warmly commended the iodoform injections.

# RAPID HEALING OF WOUNDS OF THE CRANIAL VAULT.

SINGER (Centralblatt für Chirurgie, No. 32, 1892) describes a method of curing in a short

time wounds of the cranial bones, accompanied by stripping off of the periosteum. After the wound has been treated antiseptically for several days by moist sublimate or carbolized dressings, the external table, or a portion of it, is chipped away by means of a chisel. A moist bandage is then applied. In two or three days healthy granulations appear, and in a very short time the whole wound is converted into a surface of granulation, which promptly cicatrizes. Even in suppurating wounds this method may be carried out. Of course in phlegmonous and progressive inflammatory processes such procedure is not to be recommended, the bones being treated upon general surgical principles. this treatment wounds of the skull, which would require weeks, or even months, to heal, are completely cicatrized within a few days.

THE VALUE OF ANASTOMOSIS BY MEANS OF SENN'S APPROXIMATION PLATES.

BARACZ (Archiv f. Klin. Chir., 44 Bd., 3 Heft, 1892), after a careful clinical and experimental study on the subject of intestinal anastomosis, in accordance with Senn's method, arrives at the following conclusions:

Gastro-enterostomy should always be performed according to Senn's method. The superiority of this over the old method of Czerny-Lembert suture is shown by the clinical and experimental mortality,—24.5 per cent. for plate anastomosis, as opposed to forty-two per cent. and forty-seven per cent. when the operation is performed by suture.

The anastomosis method is simple, rapid, and abundantly provides against leakage. Intestinal anastomosis should always be performed by means of Senn's bone-plates. This operation is also commended for the rapidity with which it is performed and the security it offers against leakage.

The treatment of strictures of the bowel is best conducted by means of Senn's bone-plates. In cæcal neoplasms inoperable on account of the involvement of surrounding tissues, ileocolostomy by means of decalcified bone-plates is the best operation.

In cæcal tumors, where section of the bowel is possible, Senn's operation—that is, resection of the ileum and the cæcum, invagination of each resected end upon itself and suture converting it into a blind pouch, and restoration of the gastro-intestinal tract by means of ileocolostomy—is more rational than any other methods which have been suggested.

In cases of marked inequality in the size of intestinal lumen, circular enterorrhaphy should

not be attempted, but anastomosis by Senn's plates should be accomplished. Since in resection of the gangrenous loop of a strangulated hernia the bowel lumen often vary a great deal in size, this method is particularly applicable to these cases; in fact, the author warmly recommended all of the conclusions with which Senn concludes his scholarly paper.

# CÆSAREAN SECTION IN PLACENTA PRÆVIA.

FORD (American Gynacological Journal, vol. ii., No. 9), after a discussion as to the treatment of placenta prævia, reaches the following conclusions:

- 1. The dangers of placenta prævia, as well to the mother as to the child, are due to the development of the placenta upon the lower uterine segment, and to the canalization of this segment during labor.
- 2. While the first of these conditions cannot be avoided, the second should not be permitted in placenta prævia totalis or partialis. Delivery should be by Cæsarean section.
- 3. In placenta prævia marginalis, if the circumstances were favorable, the os easily dilatable, the condition of the mother and child good, the head presenting or capable of being steadily brought to engage, and the hemorrhage arrested or moderate, it would be well to follow the method of intrauterine and vaginal tamponnade, and deliver by forceps if the child should be in danger. But, if the os were rigid, the hemorrhage profuse, the presentation lateral, the cord prolapsed and not reducible, or the fœtus evidently suffering, immediate recourse to Cæsarean section should be had.
- 4. The Cæsarean section should be performed as soon as the diagnosis is established and the condition of the mother permits, to the exclusion of all other methods, as an elective and primary operation, in all cases of placenta prævia totalis and partialis, and as soon as the conditions warranting it, in placenta prævia marginalis, have been satisfactorily determined.
- 5. In the two graver forms of placenta prævia, the Cæsarean section should be practised as a prophylactic measure, in place of any attempt to deliver by the natural passages, after the first hemorrhage.
- 6. In cases where hemorrhage is late or sets in only as labor begins, and where, consequently, the placenta is most probably attached laterally, it is advisable, until this entire subject has been practically studied, to deliver per vaginam, as a rule. If therefore the cervix

be easily dilatable, and the hemorrhage moderate, we may proceed as suggested in the more hopeful cases of marginal implantation. But even here an undilated os associated with severe hemorrhages would constitute a very serious condition. If the rigidity were due to fibrosis, it should be abated by multiple incisions; if to carcinoma, the radical Cæsarean section would be indicated. If the cord were prolapsed, and after reposition still descended, the os being partly dilated and not dilatable, dangerous hemorrhage continuing meanwhile, the Cæsarean section would be unquestionably indicated for the safety of both mother and child.

## CASE OF SUPPOSED HEART-FAILURE DURING THE ADMINISTRATION OF CHLOROFORM.

PRINCE (Medical Record, vol. xlii., No. 12) reports a case of supposed heart-failure during the administration of chloroform.

The anæsthesia was rendered complete and the operation was begun before dangerous symptoms were noted. Circulation and respiration were suspended, and the patient became livid. He was suspended by the flexed knees over the operator's shoulders, and was subjected to a trotting motion around the operating-room. With the body still inverted, the Sylvester method of artificial respiration was next prac-This was followed by no change in the symptoms. The patient was to all appearances The skin was blue; auscultation revealed no sign of pulsation. Hemorrhage had ceased, the last blood being of a very dark The patient was again lifted to the shoulders, and trotted around the room for about one minute. The operator then took a deep inspiration, joined his mouth with that of the patient, and emptied the contents of his lungs into the patient's lungs.

The chest expanded, and the diaphragm, with the weight of the intestines, was raised, and probably the flaccid heart was emptied of its blood.

Immediately the weight of the intestines and the elasticity of the chest forced a complete expiration. This was followed by another insufflation, and the treatment was continued until the lips became less livid, although the ashen hue of the countenance persisted. The artificial expansion of the lungs was continued for about five minutes.

After a little time the patient was placed upon the table, and the operation was concluded under ether.

The reporter states that this is the sixth case

of suspended animation which did not respond to either the Marshall-Hall method or the Sylvester method. All of these recovered after suspension, excepting the last, in which insufflation probably saved life.

# CAN A SEPTIC BULLET INFECT A GUN-SHOT WOUND!

L'AGARDE (New York Medical Journal, vol. lvi., No. 17) has conducted a careful research upon the question as to whether or not bullets are necessarily sterile. As a result of culture experiments and wounds inflicted upon animals, he arrives at the following conclusions:

- 1. The vast majority of cartridges in original packages are sterile and free from septic germs.
- 2. The sterile condition of the cartridges is due to the thorough disinfection and absolute cleanliness observed in the process of manufacture.
- 3. The majority of gunshot wounds are aseptic because the vast majority of the projectiles inflicting them are either sterile or free from septic germs.
- 4. Cartridges out of original packages show micro-organisms upon them, and these are not entirely, if at all, destroyed by the act of firing.
- 5. Anthrax, when applied to the projectile of a portable weapon, is seldom, if ever, entirely destroyed by the act of firing.
- 6. When a gunshot wound is inflicted upon a susceptible animal by a projectile infected with anthrax, the animal becomes infected with anthrax and dies in the vast majority of instances from said infection.
- 7. The heat developed by the act of firing is not sufficient to destroy all the organic matter on a projectile, the cherished notion of three centuries and more to the contrary notwithstanding.
- 8. The results justify the assumption that a septic bullet can infect a gunshot wound.

### Reviews.

MATERIA MEDICA, PHARMACY, PHARMACOLOGY, AND THERAPEUTICS. By W. Hale White, M.D., F.R.C.P. Edited by Reynolds W. Wilcox, M.A., M.D., LL.D. Philadelphia: P. Blakiston, Son & Co., 1892.

When it was announced that that very accurate student of disease, Dr. W. Hale White, was about to publish his earlier work, with the title of "A Text-Book of General Therapeutics," those of the profession who were cognizant of

his thoroughness as an original investigator, and of the completeness of the monographs which he had contributed to medical literature, expected that a work would appear which would practically be encyclopædic in its character. Similarly, when it was announced that a work with the very imposing title given to the one now under review would shortly appear, notwithstanding the disappointment of the first occasion, it was imagined that a tome at least the size of Dr. Brunton's celebrated work would be presented to the profession, and this was emphasized by the fact that it had been considered wise by the American publishers that Dr. Wilcox should edit the work for American readers. Neither of these works are larger than most of the smaller manuals, but it cannot be denied that they present quality if not quantity. Practical experience with Dr. White's book on general therapeutics, both as to its usefulness to the student and as to the soundness of the advice which he gives, has proved that he is an author upon whom much dependence may be placed, and a careful examination of the American version of his second work, which has been published under Dr. Wilcox's eye, show that it also is worthy of both its author and its editor. As with most books, it has been found impossible to prevent a few errors from creeping in. These, however, have many of them been eliminated by the American editor, so that in this respect the American edition is an improvement over that of the English, and, as it has been brought into harmony with the U.S. Pharmacopæia, there is nothing to prevent it from becoming a popular text-book, if such a popularity is deserved. In order to save space, information concerning much of the materia medica is placed in fine type. A useful addition is the placing of the chemical symbol after the synonyme of each drug. That the most recent remedies have been considered will be understood when it is stated that hydrochlorate of orexin has found a place in the book, as has also oxychinaseptol. The first of these remedies has practically proved itself useless, and the second has been before us so short a time as to be hardly worthy of consideration in a text-The alphabetical order is not followed, but the drugs are divided into those belonging to the inorganic and organic materia medica in as simple a way as is possible in the present condition of our knowledge. The arrangement of the book is such that, when information is desired of any particular portion of it, it can readily be obtained, although the indexing is not as complete as could be desired. There is no therapeutic index, but in its place a table of the natural orders of the vegetable drugs and a list of Latin phrases commonly used in the writing of prescriptions.

TREATISE ON DISEASES OF THE NOSE AND THROAT. By Francke Huntington Bosworth, A.M., M.D. Vol. II. Illustrated with plates and wood-cuts.

New York: William Wood & Co., 1892.

As the author well states in his preface, it is a matter of regret that the second volume of so important a work should by reason of professional duties be delayed for as long a period as two and a half years after the first volume appeared. This disadvantage is, however, more than compensated by the thoroughness with which Dr. Bosworth has presented his subject in the concluding volume, which, if possible, is superior to the first, and he is to be congratulated upon presenting to the American medical profession so complete and able a summary of our present knowledge concerning diseases of the nose and throat.

The mere statement that this second volume contains nearly eight hundred and fifty printed pages emphasizes the fact that the work is an exhaustive one, and in its thoroughness and scope is quite equal, and necessarily more modern than the celebrated work of Cohen, which has now been several years out of print. It is particularly interesting to the general practitioner to notice that the article upon diphtheria is as exhaustive as the importance of this subject requires, and the author has seen fit to engage to a certain extent in a brief historical sketch of the disease, which is valuable because at the present time the whole question of the relation of diphtheria to so-called membranous croup is so open to discussion. We are disappointed that in his definition of diphtheria he does not bring out with sufficient clearness the fact that it is essentially a local disease in its earlier stages, for he states that it is "an acute infectious disease, which results directly or indirectly from the entrance of a specific germ into the system, giving rise to a somewhat virulent form of blood-poisoning." It would have been better had the statement been made that the system became poisoned by the products of a specific germ, for, as we have pointed out before, the germ itself does not gain access to the general system. He even refers to the faucial inflammation as a characteristic eruption which accompanies the disease in much the same way that the eruption accompanies any one of the acute infectious fevers. We doubt whether this position is tenable in view of the researches recently made in this country and abroad. illustrations are sufficiently plentiful to thoroughly illustrate the text, and while many of

them are not particularly original or unusually well executed, they are, on the average, very fair. Some of them have evidently been made from very rough sketches, as, for example, the cut illustrating the palatal form of quinsy, on page 108; and that of acute uvulitis on page 90.

ANÆSTHETICS: THEIR USES AND ADMINISTRATION. By Dudley Wilmot Buxton, M.D., B.S. Second edition. Philadelphia: P. Blakiston, Son & Co., 1892.

This small book of two hundred and twentytwo pages deals in a thorough manner with the subject of anæsthetics, and is copiously illustrated with cuts, showing the various forms of inhalers used in the administration of the ordinary anæsthetics.

Dr. Buxton has already written so largely upon this subject that most of his views are familiar to our readers. This brochure will add to his reputation as a skilful anæsthetist, and will prove interesting reading to any one who is wise enough to wish to pay careful attention to this important subject.

A MANUAL OF MEDICAL JURISPRUDENCE. By Alfred Swayne Taylor. Revised and edited by Thomas Stevenson, M.D. Eleventh American edition, with citations and additions from the twelfth English edition, by Charles Bell, Esq.

Philadelphia: Lea Brothers & Co., 1892.

"Taylor's Medical Jurisprudence," which has been as popular in America as in England, has been brought forward to the most modern stand-point by the careful work of Dr. Stevenson, whose work has in turn been still further modernized and Americanized by Mr. Clark Bell, who is so well known for his interest in medico-legal matters.

All of the chapters provide such complete information as to legal decisions, or to reported cases, that the physician will rarely have to consult other works in determining the course which is the proper one for him to follow in the event of his being connected with a medico-legal case.

The work is peculiarly valuable in its constant reference to typical cases in medical journals, and to the reports of trials or records of legal testimony. So far "Taylor's Medical Jurisprudence" has been the first and foremost medico-legal authority that we have had, and the work of its recent editors has placed it on a plane which we believe other books will find difficult to reach.

FISSURE OF THE ANUS AND FISTULA IN ANO. By Lewis H. Adler, Jr., M.D.

Detroit, Mich.: George S. Davis, 1892.

It is safe to say that even the experienced surgeon may spend the thirty minutes neces-

sary to read this little work, of some seventyodd pages, with profit to himself. It is, indeed, worthy of high praise. It purports to deal with the cardinal points in connection with fissure and fistula in ano,-maladies of the greatest importance, not only because they are so frequently encountered, but, unfortunately, because they are often ill treated. The author has done his work admirably. He has confined himself to cardinal points, and his treatment of the subject is clear, concise, and direct, his teaching sound and modern. He does not confuse the reader with disputed points of etiology and pathology, but gives a forcible clinical picture of the diseases under discussion. The work is essentially practical, and is one which can be cordially recommended.

TUBERCULOSIS OF BONES AND JOINTS. By N. Senn, M.D., Ph.D.

Philadelphia and London: The F. A. Davis Publishing Company, 1892.

Senn's name is a sufficient guarantee of the fact that not only does this work represent an exhaustive review of current literature upon tuberculosis of the bones and joints, but also the results of experimental investigation and of extended clinical study.

The histology of tuberculosis is first discussed; then follows a description of tubercular abscess, together with the appropriate treatment. considering the use of drugs, the employment of cod-liver oil emulsion is discountenanced, pure oil being preferred. Tapping, antiseptic irrigation, and subcutaneous iodoformization is the method of treatment preferred. This treatment should be repeated every two weeks until the abscess cavity has become obliterated. Where the abscess is open and suppurating, the iodoformization should be preceded by incision, scraping of the inner surface of the abscess, and thorough application of peroxide of hydrogen. After the abscess has been rendered aseptic by such treatment, iodoform may be employed, as in closed tubercular cavities. Tubercular bone-affections are discussed at length in Chapter IX. Under the head of "Diagnosis," the statement is made that the existence of an area of tenderness, corresponding to the tubercular focus in the interior of a bone, is one of the surest indications of the existence of osteo-tuberculosis.

Akeidopeirastic—that is, puncture of the diseased area by means of a stout needle—is advised as a means of clearing the diagnosis in doubtful cases. Further light may be thrown upon the case by employing after this puncture a hollow needle, and aspirating enough of the

contents of the cavity to practise inoculations upon guinea-pigs. In the treatment of tuberculosis of the bones, the administration of a combination of iodide of potassium with syrup of iodide of iron is recommended. Physiological rest is to be insisted upon, and parenchymatous injections of ten-per-cent, solutions of iodoform or of balsam of Peru are strongly advocated. Ignipuncture is not absolutely rejected. If an accessible tubercular focus can be accurately located in the interior of a bone, this method of treatment should receive a trial, as it is not attended by any risks, and frequently effects a cure. The Paquelin cautery, heated to a dull red heat, usually can be carried through the softened bone overlying the tubercular focus. This operation gives abundant drainage, relieves tension, destroys all or part of the invaded tissue, and excites a plastic osteo-myelitis which limits the disease.

To insure a successful issue it is absolutely necessary to prevent infection with pus microbes. This treatment is most useful in dealing with accessible foci in the epiphyses of the large bones, and in the early stages of tuberculosis of the wrist and tarsus.

The chiselling operation should be undertaken, if possible, before swelling of the soft parts has occurred. After reaching the cavity, thoroughly clearing it out and curetting it, the application of a Paquelin cautery is sometimes of service. After the cavity has been thoroughly irrigated with iodine and water, dried, and iodoformized, it is packed with antiseptic decalcified bone-chips, iodoform is dusted freely through the chips, the periosteum is separately sutured over the bone-packing, sufficient space being left to insert at the lower angle of the wound a few threads of catgut to serve as a capillary drain, the external wound is sutured and dressed, and the limb is immobilized in a splint. It should be kept in an elevated position for at least six to twelve In all these operations the Esmarch tube should be employed. Even should suppuration follow the operation, secondary implantation with decalcified bone-chips is advised as soon as the cavity is made thoroughly aseptic.

The pathology, etiology, and the symptoms and diagnosis of tuberculosis of the joints are discussed at length; and in considering the treatment, tuberculin is dismissed as unsafe and useless.

Parenchymatous and intra-articular injections, however, receive high endorsement. Of the various materials advised, Senn prefers iodoform (ten per cent.) solution in glycerin

or olive oil. An interesting series of clinical cases is cited in support of his statement as to the value of this method.

In regard to arthrectomy, the author holds that this operation has a promising future in the treatment of primary synovial tuberculosis of the knee- and elbow-joints; but it is not equally applicable in similar affections of the other larger joints. Atypical and typical resections, with the indications and merits of each, are described. A chapter is devoted to the postoperative treatment of these cases. Guaiacol (in doses of from 2 to 5 drops two to four times a day) is advised, and prompt operation on local relapses is urged. The final chapters of the book are devoted to tuberculosis of special bones and joints.

Gluck's ivory joints are disposed of by the statement, "The procedure has even now only an historical interest."

This work, showing, as it does, a profound study of the literature of the subject, a wide experience with its clinical aspects, and written in the author's clear, forcible style, will add fresh honors to one who has already won a distinguished reputation as a teacher.

Perhaps the only adverse criticism that could be offered is that the author is somewhat dis-He gives us, however, statements founded on fact, he gives all that is best and most recent on the subject which he writes of, and he has produced a work which no educated surgeon can afford to slight. He has indirectly benefited thousands of sufferers by popularizing knowledge of the important affections upon which he writes.

ADDRESSES AND ESSAYS. By G. Frank Lydston, M.D. Second edition, revised and enlarged.

Louisville, Ky.: Renz & Henry.

This book represents a collection of the author's papers, which have for the most part appeared separately in medical journals.

The first paper deals with the "Evolution of the Local Venereal Diseases;" then follow theses upon "Gonorrhœa in Women,"."Hypertrophy and Hyperplasia consequent upon Lesions of the Genitalia," "Aberrant and Sexual Differentiation," "A Plea for Early Operation in Acute Peritonitis," "Studies of Criminal Crania," "Materialism versus Sentiment in the Study of Crime," "The Rationale of Extension of the Spine," "Tropho-Neurosis in the Phenomena of Syphilis," "Varicocele," "Observations on Stricture of the Urethra," "The Treatment of Syphilis," "Sexual Perversion," "Urethral and Genital Neuroses;" and, finally, "A Case of Circinate Papulo-

Erythematous Syphilide, with Psoriasis Palmaris Syphilitica."

Lydston is so well known as a brilliant and original writer, that these papers come as old friends to the physician who is familiar with current journalism. To those who have not seen these papers this volume will be of distinct service. To the reviewer the theses which are especially worthy of commendation are those on "Varicocele," on "The Treatment of Syphilis," and on "Stricture of the Urethra." The explanation of the phenomena of syphilis on the tropho-neurotic basis is exceedingly ingenious, and the thesis upon "Acute Peritonitis" is characterized by sound common-sense. The specific nature of gonorrhœa is not recognized, though this seems, in the light of Bumm and Wertheim's experimental and clinical studies, about as clearly demonstrated as is the specific nature of tuberculosis.

It is a tribute to the author's honesty to find stated, on reading over the chapter on "Varicocele," that excision of the scrotum, even though performed in the most thorough manner, does not necessarily accomplish a radical

The fact that this collection of papers is now in its second edition shows the appreciation with which it has been received by the profession.

GENITO-URINARY AND VENEREAL DISEASES: A MANUAL FOR STUDENTS AND PRACTITIONERS. By Charles H. Chetwood, M.D. Series edited by Bern B. Gallaudet,

Philadelphia: Lea Brothers & Co., 1892.

This quiz-compend upon genito-urinary and venereal diseases has the merit of reflecting the modern practices in the treatment of diseases with which the manual deals. Throughout the whole volume the classification and teachings of Keyes are strongly reflected. In a book such as this, made up of questions and answers, a great deal depends upon the directness and clearness of the questions. On this point the book is open to some criticisms. Thus, on page 91, the question is asked, "What is the course of treatment to pursue in cases of enlarged prostate which require attention?" The answer is given in a little over two pages of closely-printed matter, not always clearly to the point, and containing directions which could better have been expressed in less space.

Cystitis is disposed of in two pages. use of the cystoscope is properly commended.

In describing the operation of varicocele the very admirable procedure of Dr. Keyes is given

at length. This is quite proper, but the operation which is far more common—that is, incision, excision, and ligation—should also be described. To the radical operation of ligation and excision of veins, together with extensive resection of the skin of the scrotum, attention should also be called.

The book is to be commended for its thoroughness and for its accuracy of statement. The only criticism to be made is that there is a certain lack of clearness in expression.

THE PHYSICIAN'S LEISURE LIBRARY. GONORRHŒA AND ITS TREATMENT. By G. Frank Lydston, M.D. Detroit, Mich.: George S. Davis, 1892.

Lydston is so widely known as an original writer that an exposition of his views upon gonorrhoea and its treatment is peculiarly acceptable.

He takes ground against the gonococcus as invariably the cause of virulent urethritis. He holds that proof of this fact is still wanting, and he presents by all odds the strongest and best-considered arguments against this now generally received teaching the reviewer has yet seen.

Everywhere are to be found evidences of wide clinical observation. Under treatment, the author's teaching and advice will certainly meet with the hearty co-operation of most of those who have had large experience.

Speaking of the endoscope, he states that for practical purposes the ordinary straight, hard rubber or silver tube, with the addition of a strong light reflected from a laryngoscopic reflector, or from one of the modern small reflecting-lamps, will be found sufficient. In the abortive treatment of gonorrhœa by strong solutions of nitrate of silver, or by means of copious solutions of hot bichloride, he has little faith. Virulent cases he believes should be confined to bed for from a week to two weeks. If this can be accomplished, the majority of cases can not only be subdued, but stricture and other complications and sequelæ would be almost unheard of.

The theory is advanced that many individuals who, in after-life, are afflicted with prostatic hypertrophy, owe that condition to an early gonorrhoea.

The author prefers, for the abortive treatment of urethritis, prolonged irrigation of the anterior portion of the canal with a weak solution of the bichloride of mercury,—I to 20,000. This should be used as warm as can be comfortably borne, and kept up for half to three-quarters of an hour at a time, the process being repeated three or four times during the first

twenty-four hours, after which the treatment should be stopped. At the end of twenty-four hours of abortive treatment, whatever drug be used, all local treatment should be stopped for a few days, alkaline diuretics, restricted diet, and attention to hygiene being the only permissible measures of treatment. In a few days, if a virulent urethritis does not develop, mild astringent injections and the internal administration of balsams are indicated. This book represents the clear ideas of a careful and original thinker upon the subject of gonorrhea. As such it will be read with interest and profit by both the specialist and general practitioner.

DISEASES OF THE CHEST, THROAT, AND NASAL CAVITIES, INCLUDING PHYSICAL DIAGNOSIS AND DISEASES OF THE LUNGS, HEART, AND AORTA, LARYNGOLOGY, AND DISEASES OF THE PHARYNX, LARYNX, NOSE, THYROID GLAND, AND ŒSOPHAGUS. By E. Fletcher Ingals, A.M., M.D. Second edition, revised and enlarged. Illustrated.

New York: William Wood & Co., 1892.

It is a matter of surprise to many general practitioners that specialists in diseases of the chest rarely attempt to treat diseases of the upper air-passages, and that rhinologists and laryngologists confine their studies to the lungs and pleura. In many instances the condition of the larynx and trachea is so closely associated with pulmonary difficulty that only the most arbitrary judgment can possibly account for ignoring the condition of any one of these areas.

One of the few physicians in this country who treat the upper respiratory tract as the lower respiratory tract is Dr. Fletcher Ingals, of Chicago, who, recognizing that the profession had no book which was distinctly devoted to the entire respiratory tract and not to a single part of it, has published his lectures to the students of Rush Medical College, to which have been added a study of the etiology, symptomatology, and pathology of these diseases, points not discussed in the first edition of the work.

We heartily recommend the book to those who desire to become thoroughly acquainted with the best literature upon diseases affecting the respiratory tract, and while we are forced to differ from the author in a number of points, we cannot but admire the thoroughness with which he has completed his task.

The illustrations are unusually well selected, and in nearly every instance show exactly what the text requires. We note, however, that Dr. Ingals is still one of those who believe that diphtheria is primarily a constitutional disease

with local manifestation. We also notice with regret that, while he quotes the studies of Prudden, Ruffer, Klebs, and Löffler, nothing is said about the equally important researches of Welch and his collaborators in Baltimore. Perhaps, if more attention had been paid to these points, Dr. Ingals would not at the present time regard the disease as one which is primarily constitutional.

In the treatment of diphtheria too little recommendation is given to the use of peroxide of hydrogen, and too much attention is paid to the employment of far less valuable remedies.

In the treatment of obstructions of the respiratory tract, Dr. Ingals prefers intubation to tracheotomy in children under five years of age. In older children he believes "intubation to be not quite as satisfactory as tracheotomy," but, nevertheless, to be resorted to freely in any instance where the more severe operation is forbidden.

A TREATISE ON NERVOUS AND MENTAL DISEASES; FOR STUDENTS AND PRACTITIONERS OF MEDICINE. By Landon Carter Gray, M.D. Illustrated.
Philadelphia: Lea Brothers & Co., 1893.

Dr. Gray has given us a book of nearly seven hundred pages, which has a right to be placed on the plane with the other works on nervous diseases written in the last few years by American authors.

While it does not show the peculiarly original characteristics of Gowers's work, we doubt not that for American uses it will prove of value. The author has avoided the danger of excluding the opinions of others in order that his own ideas might find full play, and yet has not loaded the text with references which make its perusal difficult. Scattered through the book there are a number of copious bibliographies, and at the end of the work he has resorted to the somewhat ancient, but perhaps useful, custom of providing a glossary of the terms commonly employed in discussing nervous diseases.

For the country practitioner, the very large number of clear illustrations which are presented cannot fail to be of very great service, because in most cases they present very important types of the diseased conditions which they represent.

It has been one of the dark spots in the fair fame of neurology that so little has been done by neurologists which has looked towards the treatment and cure of nervous diseases. It is true that in many instances nervous diseases are at present beyond our therapeutic control. This is, however, no excuse for losing sight of

the true cause of the existence of the physician, -namely, the cure of the disease. Recognizing this need in neurological literature, Dr. Gray points out in his preface that he has endeavored to present the best therapeutic possibilities which can be offered in the treatment of nervous diseases, and it is but fair to him to say that his book is peculiarly valuable, because he has discussed with unusually clear insight into the subiect the value of the various remedies which have been employed by physicians in the treatment of nervous diseases. Though it may be said that in many instances these measures amount to but little, our patients have a right to demand them, and, so far as we know, Dr. Gray's effort is practically the first successful one to present to his professional colleagues the best information concerning these points.

Naturally the author gives full credit to the neurologists who in this country have deserved mention for their thorough studies in nervous diseases, but nevertheless has been cosmopolitan enough at the same time to recognize the good work done by Europeans.

A TEXT-BOOK OF NERVOUS DISEASES, BEING A COMPENDIUM FOR THE USE OF STUDENTS AND PRACTITIONERS OF MEDICINE. By Charles L. Dana, A.M., M.D. New York: William Wood & Co., 1892.

Within the last two years four books upon nervous diseases, of considerable note, have been placed before the profession by New York authors,—namely, the last edition of Hammond's well-known work, under the editorship of the author's son; the book of Dr. Landon Carter Gray, of Brooklyn, which has just been reviewed in the GAZETTE; the work, entitled "Familiar Forms of Nervous Disease," by Dr. M. Allen Starr, which does not profess to be a complete work upon the subject; and, finally, the book which we now have under notice. This one is published in the same series and in the same style as the work of Dr. Reynolds upon obstetrics, which, it will be remembered, received such a favorable review in the columns of the GAZETTE early in

A point which strikes us as being particularly valuable about Dr. Dana's book is the unusually copious and clear illustrations, which are found on almost every page. The frontispiece is a composite photograph, showing the relations of the cranial surface to the fissures and convolutions, after Alec Fraser. The author has not been content with introducing old cuts, with which almost every one is familiar, but many of them are new. The illustrations are not only of cases and of pathological

REVIEWS.

changes, but show the manner in which various forms of apparatus can be employed in treating nervous diseases, or for the purpose of forming a correct diagnosis. We believe that the author has succeeded in accomplishing that which he states in his preface is his chief desire,-namely, to present the American medical profession with a comparatively small work which would be creditable to American neurology. The illustrations of the manner in which the various reflexes are to be obtained are not found in most works upon the subject, and will add considerable to the value of the work in the hands of the student or resident hospital physician. Of all the American works on neurology this impresses us most favorably.

HYGIENIC MEASURES IN RELATION TO INFECTIOUS DIS-EASES. By Geo. H. F. Nuttall, M.D., Ph.D. New York: G. P. Putnam's Sons, 1893.

Dr. Nuttall has written a book which is almost too elementary for the practitioner who is at all in touch with the advances recently made in public health, and perhaps a little advanced for the ordinary layman, yet its scope of usefulness will be found rather with the latter than with the former. In many instances, where the physician finds it impossible to give verbal directions which he thinks necessary for avoiding the dangers of infection, the presentation of a copy of this little work will, if the patient will read it, prevent many difficulties.

The book has the stamp of Johns Hopkins Hospital practically on every page, and the measures of disinfection and antisepsis recommended by members of the well-known staff of that institution are constantly given as the best, which, we doubt not, is but true.

A MANUAL OF THE PRACTICE OF MEDICINE. PREPARED ESPECIALLY FOR STUDENTS. By A. A. Stevens, A.M., M.D. Illustrated.

Philadelphia: W. B. Saunders, 1893.

Dr. Stevens's book professes to be nothing more than a digest of most of the prominent works upon the practice of medicine and allied branches. Within the short space of five hundred pages, including the index, Dr. Stevens has succeeded in placing pretty much all the information which he believes important in connection with the study of the practice of medicine. The author's experience as a teacher of students has been sufficiently wide to give him a very correct idea as to their needs, and we doubt not that he has provided a book filled to the brim with the points most needed for the quiz class. The necessity, however, of

concentrating the information necessarily makes the book rather uninteresting, and divides the text into such short sentences that it partakes largely of the character of the ordinary quiz compend. It has practically all the advantages and disadvantages of this well-known class of medical publications.

A Pocket Medical Dictionary, giving the Pronunciation of about Twelve Thousand Principal Words used in Medicine and the Collateral Sciences. By George M. Gould, A.M., M.D.

Philadelphia: P. Blakiston, Son & Co., 1892.

This is the most modern and handy dictionary which we have yet seen. It is somewhat more bulky than the small dictionary of Cleaveland, which is so well known to practitioners and medical students. It contains tables of the principal arteries, of muscles, nerves, and bacteria. The dose-table is taken bodily from the "Physician's Visiting-List," published by P. Blakiston, Son & Co.

THE MEDICAL NEWS VISITING-LIST FOR 1893. Philadelphia: Lea Brothers & Co., 1892.

The Medical News "Visiting-List" possesses all the advantages in this issue which have made it popular in the past. It comes either with the thumb-letter index, which increases its value, or without this addition. Probably the most valuable material in the first thirty pages of text is the description of the ligation of arteries, with a diagram showing the incision for each ligation. In the dose-table a double column is given, giving the dose in grains or minims and in grammes or cubic centimetres. Those who have used this list before undoubtedly will employ it again, as they have learned by experience that it is as satisfactory as any that can be obtained.

THE ANATOMY OF THE PERITONEUM. By Franklin Dexter, M.D. Illustrated.

New York: D. Appleton & Co., 1892.

To many medical students and physicians the anatomy of the peritoneum is very much like a Chinese puzzle, and there are many practitioners who, after years of active professional work, have no definite idea of the manner in which this very important membrane is reflected over certain portions of the abdominal viscera. While they know that we have a lesser and greater peritoneal cavity, they are not very clear in their minds what these two terms indicate. Dr. Dexter has contributed to medical literature a little brochure, which does much towards making this subject clear. The diagrams, which are printed on every other page, are most of them colored, and illustrate

very effectually the description, which is printed on the opposite page.

While the book has not a very wide range of usefulness, it is an interesting contribution to the subject.

#### Correspondence.

#### LONDON.

#### (From our Special Correspondent.)

Thymol as an Anthelmintic—Effect of Ergot on Uterine Involution—Lactic Acid in Pharyngeal Tuberculosis— Anæsthetics in Gynæcology—Abdominal Section in Pelvic Peritonitis.

The therapeutic uses of thymol have of late years received some recognition, and it is now reckoned that this drug is one of our most valuable anthelmintics. That it is not of universal application must, however, also be recognized, and the limits of its utility as an anthelmintic have been very well defined in a recent paper by Sonsini. Thymol was first employed for this purpose by Bozzolo in 1880, in cases of anchylostomiasis, and with such success that other practitioners were tempted to expect to find it the possessor of universal parasiticide properties. It has been warmly advocated as a remedy for all intestinal worms, as well as for the filaria sanguinis hominis. Dr. Crombie, of Calcutta, has recently combated this latter assertion, but holds that it is efficacious for most other intestinal parasites. This is not quite the experience of Sonsini. While finding thymol to succeed in most cases of anchylostomiasis, he has found it fail in one case of this disease. However, he finds that expulsion of the anchylostoma is the rule, but that other worms are but rarely expelled after the use of thymol. In the case of the ascaris lumbricoides, he warmly advocates santonin, or, better still, its derivative, santoninissima, first introduced by For oxyurides, thymol is not of Coppola. greater efficacy than the older remedies. There is a further fact with regard to the drug,—that if it be absorbed in large quantities it is liable to produce toxic effects characterized by vertigo, by a brown coloration of the urine. Such symptoms rarely follow a maximum daily dose of 4 grammes, but may be induced if large quantities be given by intestinal injection.

As for tæniæ, the author has never tried thymol for tænia solium or tænia mediocanellata, deeming pelleterine, properly administered, the best remedy in such cases. Liquid extract of male fern and calomel may also be of the greatest service. To summarize, Dr. Sonsini thinks thymol very efficient against anchylostoma, but most uncertain in the case of other nematoides. He prefers to give it in the form of powder, enclosed in wafer-paper, rather than as tabloids.

Much doubt has latterly been thrown on the question of the desirability or otherwise of giving ergot during the lying-in period, and some have inclined to discard the drug altogether in this connection. Some researches of Blanc, of Lyon, have apparently given some justification for this attitude. He found that ergot, given during the first five or ten days of the lying-in period, had practically no effect on the process of involution, although a contrary opinion had been expressed by Dr. G. E. Herman. This last authority now justifies his former opinion, and points out that Dr. Blanc's cases were "picked" ones of normal labors, in which no irregularities of involution were to be expected. In his own cases, which were taken at random, there was the most distinct evidence that when the causes of subinvolution were present, ergot prevented their manifestation. He is convinced that while in a perfectly normal lying-in ergot is not required, yet when any cause of imperfect involution is present or suspected, ergot, given throughout the lying-in period, will be a safeguard against untoward

The value of the local application of lactic acid in cases of tubercular ulceration of the pharynx was once more demonstrated by Dr. Percy Kidd at the Medical Society's recent meeting. He showed a patient of forty-one years, who had been relieved of a very extensive ulceration, which caused the most intense pain on swallowing by this method. He considered that the most suitable cases for this treatment were those presenting ulceration without thickening of the mucous membrane. In the case of induration with an unbroken surface, the Paquelin cautery should first be applied, after which the acid should be freely and thoroughly rubbed in. Great patience and perseverance were necessary in order to insure good results.

The subject of anæsthetics, while of interest to all branches of surgery, is particularly interesting in connection with gynæcological practice. In view of the recent very frequent deaths during anæsthesia, and of the large amount of research which has been, and which still is being, brought to bear on the question, a paper by Dr. Dudley Buxton, on the "Uses of Anæsthetics in Gynæcology," will attract particular attention. When it is remembered that not only the success of the operation but

the very life of the patient may be jeopardized by the manner in which the anæsthetic is administered, it will be impossible to deny the importance of a complete knowledge on this point.

In gynæcology there are peculiar requirements, which are absent, or at least not so urgent, in general surgery. These were the points discussed by the orator. The choice of a suitable anæsthetic, as well as the method of its administration, are points of especial importance, partly on account of the necessarily long duration of the anæsthesia, and partly also on account of the position in which the patient has often to be placed, a posture which often interferes seriously with the comfortable administration of the anæsthetic. An abdominal section may be a very simple or a very serious and complicated operation, both for the surgeon and for the anæsthetist. Such an operation gives rise, as a rule, to a very considerable amount of shock, due partly to the necessary manipulation of viscera, and partly also to the contact of air with the abdominal cavity. such cases an anæsthetic, by either adding to or lessening the shock which exists, may turn the balance against or in favor of the patient. But the question of shock is a most complex one, and depends also on a large number of factors. Among these is the amount of hemorrhage during the operation. It is advisable, therefore, to choose, as far as possible, an anæsthetic which does not encourage hemorrhage. Finally, the convenience of the operator must be studied. The claims of the more usual anæsthetics must, therefore, be considered with regard to-1, the patient; 2, the operation; 3, the operator.

Chloroform has everything in its favor, save its depressant action. It is extremely portable, and requires no more complicated apparatus for its administration than a folded piece of lint. It insures placid anæsthesia, and lessens immediate hemorrhage by reducing blood-pressure and quieting the cardiac movements. It also quiets respiration by its action on the medulla. For an abdominal section, from the operator's point of view, no better anæsthetic could be desired. It has been also claimed for chloroform that the after-effects are less than in the case of ether. This may have been true in the days when enormous quantities of ether were administered, but at the present time, when weight for weight, we do not require to use a larger amount of the one than of the other, this argument will hardly hold good. Again, the important plea urged for chloroform as against ether in large operations, such as hysterectomy, that the tendency to hemorrhage is less, will not bear close scrutiny. Truly, the tendency to *immediate* hemorrhage is less on account of the temporarily reduced bloodpressure, but on returning the patient to bed this passes off, giving place to acceleration and increased force of the heart-beats. This state of things directly encourages subsequent oozing of blood. In the case of ether, the condition is one of constant stimulation during the administration, so that all'hemorrhage can be seen and arrested during the operation, and there is little fear of subsequent trouble.

The pleasantness of the smell of chloroform, the ease of its administration, and the quiet anæsthesia induced would undoubtedly be most important arguments in its favor for abdominal operations were it not for the fact that there is another grave objection to its use. Whether we consider that it acts through the heart, the lungs, or the nervous system, there remains the unpleasant fact, so abundantly illustrated lately. that chloroform does kill patients out of hand and in a manner which at present baffles all our efforts to obviate. In the orator's experience at the Soho Square Hospital for Women, he often found the use of chloroform accompanied by grave danger, due, he believed, to its action on the heart. So that in every case in which a selection has to be made, we must consider whether the advantages counterbalance the drawbacks.

One other point must be mentioned, which is this: It has been stated that, while chloroform anæsthesia is rapid, it is dangerous; that etherization is safe but slow; and that therefore it is best to use the A.-C.- E. mixture in most cases. This can no longer be maintained, for it is now admitted that the only safe method of giving chloroform is by inducing anæsthesia slowly (eight to ten minutes), while any excess over two minutes in the case of ether is entirely unnecessary. Practically, therefore, when we require a rapid anæsthesia without struggling, as in patients with weak hearts and brittle vessels, we shall do best to employ ether, but to do so after a preliminary administration of nitrous oxide. This forms an apparently ideal combination.

The grave indictments commonly brought against the use of ether are as follows: It has been said to cause struggling, which may produce serious after-effects; pulmonary troubles consequent on the cooling due to its rapid evaporation from the pulmonary mucous membrane; it has been also said to produce more nausea and vomiting than does chloroform. As regards the first point, struggling may be

prevented in the way just indicated. Further, the amount of cooling due to evaporation need not be great, provided the ether be properly given by Clover's method and in minimum quantity. Again, in the author's practice, there has not been a case of nephritis directly due to ether, and ether bronchitis is distinctly uncommon, at any rate in this country. It may more often be correctly attributed to exposure of the body during the operation. To sum up, we must say of ether that it possesses decided advantages, and of its disadvantages, that these have been in part exaggerated and are in part the result of faulty administration. It is alleged that if chloroform kills it kills at once, but that ether may kill any time within a fortnight, and with this Dr. Buxton is inclined to agree. He also maintains, however, that the sequelæ of etherization are almost entirely preventable, so that this alleged drawback will have little weight with him. In conclusion, let the anæsthetic, no matter which be chosen, be administered by "rule of thumb," by an inexpert practitioner, and there is no wonder that accidents occur. In experienced hands these are

The Obstetrical Society has just brought to a conclusion a most interesting discussion on the value of abdominal section in certain cases of pelvic peritonitis. The importance of this subject will be at once recognized, and, since it may be accepted as an axiom that these cases, which form a very important proportion of the whole number of serious gynæcological cases, nearly always come, in the first instance, under the care of the general practitioner, it is very essential that correct views should be presented to this section of the profession. Dr. Cullingworth, in his opening paper, considered the question as to whether abdominal section is or is not often called for in such cases. Dr. Cullingworth himself is a believer in the efficacy of the operation in a great number of cases, but this opinion was by no means acceptable to all present. Now, although the title of the paper was indefinite, I conceive that the really debatable ground was enclosed within fairly narrow limits. It is not in connection with cases of peritonitis complicating ovarian tumor, cancer of the uterus, etc., that the controversy as to whether abdominal section is necessary rages, for on these points all are now fairly agreed. The doubtful cases are those in which there is a chronic inflammation of the uterine appendages, which has led to closure of the Fallopian tubes, which are often at the same time thickened and distended with fluid, and constitute either a hydro-, pyo-, or hæmatosalpinx. There is no doubt that this condition of things is very frequently met with, and, in the majority of cases, is a distinct danger to life. It is equally certain, however, that in a number of cases the disease passes into a quiescent state without active surgical interference, as the result of simple palliative measures. In favor of the operative treatment we have the following facts:

Dilatation of the Fallopian tubes may frequently give rise to pain in the abdomen, backache, and irregularity of the menstrual function, the catamenia being either scanty, excessive, or attended with considerable pain.

Although under palliative measures these symptoms may for a time become quiescent, they more frequently recur, and the patients become chronic invalids.

In the majority of cases it is possible to remove the diseased organs with comparative ease, though this is by no means always the case.

The presence of a pyo-salpinx is, further, a distinct danger to life, though a hydro-salpinx may be comparatively innocent.

The points advanced by the opponents of operative measures are these:

The operation, while it relieves some cases, does not always do so, and in some instances things are distinctly worse after than before operation.

In a certain proportion of cases adhesions between the adjacent organs render complete removal either extremely difficult or impossible.

While the mortality from disease of the Fallopian tubes is not so large, that from the operation for its relief is by no means inconsiderable.

It will, therefore, be admitted that there is a very grave responsibility resting with the surgeon who advocates abdominal section as a routine practice in cases of disease of the Fallopian tubes, such as we have been considering, and that it will be necessary to advise each case according to its merits. There is no doubt that a careful examination under anæsthetics will give valuable information as to the condition of the surrounding parts, and enable us to judge in some measure of the probable ease with which the operation can be performed, and this should never be omitted. Of course, should operation be decided upon in any case, its success must largely depend on the extent to which surrounding parts are involved. There is, however, no doubt that the time has not come when hard-and-fast rules can be formulated so as to guide us to a certain decision as to when abdominal section should or should not be performed.

# Therapeutic Gazette.

Whole Series, Vol. XVII.

PHILADELPHIA, PA., February 15, 1893.

Third Series. Vol. IX. No. 2.

#### CONTENTS. Original Communications. The Treatment of Acute Laryngo-Trachetits, By Ralph W. Seiss, M.D.... The Radical Cure of Hydrocele by Incision, Application of an Irritant, and Drainage, By W. Joseph Hearn, M.D. Salicylates in the Treatment of Pleurisy with Effusion, By George Dock, M.D. Resterilized Sponges, with Bacteriological Investigation. By D. Braden Kyle, M.D..... On the Treatment of Hzemoptysis. By Dr. Fr. Eklund...... The Treatment of Incomplete Abortion. By Edward P. Davis, A.M., M.D..... A Consideration of some Modern Therapeutic Agents in the Treatment of Diseases of the Stomach. By David D. Stewart, M.D..... Collective Report on Anæsthesia...... The Treatment of Uric-Acid Gravel and 77 Caffeine 113 The Early Removal of Pleuritic Effusions 113 The Coloration of the Urine of Patients An Unusual Effect of Jequirity in Chronic An Onissua Linet of Jequiny in Con-Trachoma Severe Burn of the Conjunctiva by the Instillation of Calomel while giving Potassium Iodide Internally......Intraocular Injection of Antiseptic Solu-An Antispasmodic 114 An Antispasmodic 114 A Prescription for Chronic Bronchitis 114 Treatment of Chorea by Exploin . 134 Leading Articles. Reports on Therapeutic Progress. A Powder for Hyperedrosis..... 144 Reviews..... 140 Correspondence.

sition and Hypnotic Action..... 122

### Original Communications.

THE TREATMENT OF ACUTE LARYNGO-TRACHEITIS.

BY RALPH W. SEISS, M.D., Adjunct Professor of Otology in the Philadelphia Polyclinic.

T will probably be admitted that no disease is more common on the Atlantic seaboard than the deep-seated "throat colds" which have been so variously named and so much more variously treated. Patients, if not practitioners, will also at once admit that the standard "cough syrups," purges, diaphoretics, etc., are anything but satisfactory in their results, and that a more definite and reliable method of treatment is most desirable.

London Letter...... 142

The cause of acute laryngo-tracheitis the writer believes to be quite unknown, although the predisposing factors are familiar to almost every one. Exposure of any kind is certainly not in itself sufficient to produce the disease, as it is a matter of common experience that severe attacks may occur without the slightest assignable cause, or that great exposure under the worst conditions may not be followed by any discomfort. All that can be said at present is that the etiology of laryngo-tracheitis is that of a general "cold," the onset of which may, in certain cases, be determined by dampness or exposure, but which depends either upon a definite contagion or upon a combination of atmospheric conditions too elusive to have yet been recorded.

As is well known, the disease is most common during the spring and autumn months, but it occurs nearly as often in midwinter, and cases were numerous in this city during the past June and July. The disease is largely epidemic in character, large numbers of persons usually being affected at the same time; this is constantly noted in private practice and clinics where the naso-larynx is under special observation, acute cases always applying in large groups. Whether contagion has anything to do with this indisputable fact the writer is not prepared to state, although it is his belief that a certain proportion of cases of acute inflammation of the upper respiratory tract are communicable by close contact.

Among the predisposing factors of acute tracheitis the *peculiar vulnerability* sometimes called the "catarrhal tendency" plays the most important part. Chronic disease of the upper respiratory tract, if of slow and constant type, seems as often to have a *protecting* as an exciting influence, and the peculiar sensitiveness may exist without any marked lesions, the condition being essentially a local angio-neurosis, usually associated with "neurasthenia," and frequently dependent on inherited gout.

The clinical history of an attack of laryngotracheitis is known to all dwellers on our North Atlantic coast and lake regions, few persons reaching middle age without one or many attacks. Irregularity of onset is characteristic of the disease; it may begin as an ordinary acute coryza, as a pharyngitis, or may start in the larynx and trachea ab initio. It may be preceded by malaise and febrile prodromata for one or more days before the local symptoms are prominent, or may begin without warning as a violent local inflammation, affecting the general health only secondarily, if at all. case usually commences as an acute nasal inflammation, characterized by stenosis, hypersecretion, local soreness, and frontal headache from extension of swelling to the sinuses. There is usually a rise of from one to three degrees in temperature, with corresponding malaise. From a few hours to several days after the initial coryza laryngeal tenderness, slight dry cough, and hoarseness or aphonia appear as a result of extension to the larynx, difficult deglutition and dyspnœa also occasionally occurring in severe cases. Involvement of the trachea is shown by sternal pain, more difficult breathing, and increased painful cough, and general wretchedness is marked in most cases. In from one to three

days the cough becomes "loose" and expectoration abundant, consisting of yellowish or gray muco-pus, containing epithelium, white blood, or pus-cells, and sometimes blood. Resolution results in from one to many weeks. the symptoms gradually subsiding, the sputum becoming simply mucoid, and the general strength rapidly reaching its previous level. In less favorable cases the disease becomes subacute or chronic in character, and the symptoms persist for an indefinite period. Acute or chronic bronchitis are also common sequels of this disease; but although the primary bronchi are probably always affected, typical bronchitis is not the rule in average cases of acute laryngotracheitis.

The diagnosis, while usually easy from the symptoms presented, can only be certainly established by the reflecting-mirror and laryngoscope. In early stages the lesions may be largely confined to the nose or pharynx, acute coryza presenting the usual appearances of blood-red congestion and marked boggy swelling of the turbinated tissues; acute pharyngitis, the bright-red blush of the region of the halfarches and uyula characteristic of that disease. As the inflammatory process extends downward, blush of any or all the regions of the larynx becomes readily recognizable by the mirror. The color varies with the intensity of the disease, in severe cases being a blood hue. Hemorrhages into the membrane or through it into the larynx are not very uncommon. Swelling is not pronounced, except in very severe cases; in such the cords may be wholly obscured by the gorged ventricular bands; shallow, raw erosions are quite common in such examples. The tracheal membrane, if it can be seen, will be found to be similarly congested and swollen, and in later stages is often flecked with adherent muco-pus. If the voice has been much used during the attack, the edges of the cords often become somewhat raw and eroded, and it is here that minute ecchymoses most frequently After exudation has become established, the red coloration becomes less vivid, and the mucous membrane is flecked with tenacious exudate, often largely interfering with a satisfactory view of the larynx. As convalescence becomes established, the redness and swelling disappear, and with them the mucopurulent exudation, the erosions heal over, and the general mucous membrane, in favorable cases, rapidly returns to a condition of nor-

Pathologically the process is a superficial one in almost all cases, not producing any marked changes in the walls of the larynx or trachea beneath the mucous membrane. The first change consists of an acute engorgement of the membrane, the functions of the mucous glands being thereby arrested, causing the "dry stage" of the disease. As the tissue gradually recovers itself, the glands become abnormally active, and produce an increased quantity of mucus. The superficial epithelial cells are shed in large numbers, the deeper layers proliferating to make up the loss. Numerous leucocytes ("inflammatory cells") crowd the membrane and appear on the surface as puscells, and are expectorated with the abundant mucus. Sometimes the epithelial desquamation is so rapid that erosions are formed, which, as noted above, are recognizable with the laryngoscope during life. If early resolution occurs, the leucocytes disappear, the capillaries contract to their normal lumen, and the tissue rapidly returns to normality; but if the inflammation has been intense or prolonged, the white blood-cells undergo organization, forming lymphoid ("granulation") tissue, resulting in the inflammatory masses so common in the throat. The capillaries also may remain permanently dilated, and the epithelial layer may be so affected that proliferative and desquamative processes may persist for an indefinite time, chronic laryngitis, in short, resulting.

Perhaps in few acute diseases is the prognosis so modified by the treatment selected as in that under consideration. Neglected or hap-hazardly treated "colds" may and do run on for an indefinite time, impairing or greatly endangering the ears, voice, and general health, and frequently lighting up grave conditions in the lower bronchi or pulmonary parenchyma. Only in the very vigorous, or in those whose surroundings are especially favorable, can a typical attack of larvngo-tracheitis be expected to run a favorable course without sequelæ, unless systematically and carefully treated throughout its course. On the other hand, the severest cases, involving the secondary bronchi, can be effectually controlled in nearly all instances, the patient at once relieved, complications avoided, and all symptoms removed in from one to four weeks of treatment.

The writer was at one time convinced that typical cases of acute laryngo-tracheitis could be aborted if properly treated at the commencement of the attack. Later and more extensive experience has argued against this desirable possibility; but it is quite certain that the severity of the disease may be greatly mitigated, and its duration shortened at least one-half, by proper management during the first twenty-four hours of its course.

If seen before laryngeal hyperæmia has become marked, the disease can often be made to run a mild course of three or four days by the use of well-selected sprays applied to the whole upper respiratory tract. Beginning with the nasal chambers, a solution of boric acid, borate of sodium, and chloride of sodium in rose-water gives the best results, the cavities being thoroughly but gently sprayed. An instillation of a few drops of a five-per-cent. solution of cocaine may first be necessary to clear the chambers, and in some cases contributes to the good effects of the treatment. As a pharyngo-laryngeal spray, a saturated solution of potassium chlorate, to each ounce of which one or two grains of crystal carbolic acid has been added, is by far the best routine application; in certain selected cases watery solutions of extract of hyoscyamus, salicylate of sodium, and alum are sometimes to be preferred. An air-pressure of from fifteen to twenty pounds, and an atomizer throwing a very fine, even spray give the best results; the writer commonly uses a long, straight instrument, holding the tip just within the patient's mouth, and instructing him to breathe deeply, and to signal when he desires to rest or expectorate. The vaporization may be continued, with brief intervals of rest, for from three to eight minutes, after which the whole upper respiratory tract should be freely coated with some bland oil. such as albolene, containing a percentage (three to fifteen grains to the ounce) of menthol, oil of eucalyptus, or pine-needle oil, the nose, pharynx, and larynx being sprayed in turn, the patient breathing deeply, so as to carry the oil to the trachea and bronchi. If the individual can rest both body and voice for a few days, nothing more may be required; the time-honored laxative is occasionally expedient, and a hot whiskey punch, with a moderate dose of quinine, or a small one of morphine, may be ordered to be taken at bedtime. A mustard-plaster to the tracheal region is a useful adjunct, and a hot foot-bath is often valuable. Purgatives and active diaphoretics are, in the writer's experience, far more likely to do harm than good, and are never used; pilocarpine has, however, been highly lauded as an aborting agent in this disease. Cocaine is, in the writer's opinion, altogether unsuited for repeated use in this disease; a certain author, however, has advocated the employment of a ten-per-cent. solution every twenty minutes until relief is secured as an aborting agent. Without venturing to reflect upon the experience of any one else, the present contributor is convinced that such a treatment used by himself would produce most alarming results in many cases, and might be fatal in not a

few. As the primary contracting effect of the alkaloid is always followed, after repeated applications, by excessive vaso-motor relaxation, amounting almost to paresis, such a therapeutic measure for an active hyperæmia seems to be the worst possible that could be devised. The toxic constitutional effects of the drug would alone render its employment in such quantities most hazardous, even were the local effects beneficial.

After laryngo-tracheal congestion has become decided, the disease will run its usual course as to stages, whatever treatment be used; but the duration of the attack can still be decidedly shortened. and the severity of the symptoms much relieved. Sprays have the same sedative action as when used in the earlier stages, and similar formulas may be employed. Astringents are valuable, and are best used in the Oliver's vaporizer, a 15-grain solution of alum with carbolic acid, glycerin, and rose-water being a favorite with the writer for use with this apparatus. pressures-up to twenty-five pounds-give the best results, and the séance should occupy from ten to fifteen minutes, the patient breathing the vapor deeply into the lungs. If cough and pain are prominent and the tracheal congestion marked, hot vapor inhalations for home use will be found most soothing and beneficial. pound tincture of benzoin is the most useful drug at our command for this purpose, to which may be added menthol, creosote, eucalyptol, or terebene, the first named being purely sedative, the others more or less stimulating in character. Home-made inhalers are not of much value, and the old-fashioned funhel-and-cup arrangement is wholly "homoeopathic" and absurd. A proper instrument is an air-tight bottle or can, through the cork or lid of which extend two tubes of a quarter of an inch calibre; one should extend just through the stopper, the second to the bottom of the vessel. For use, the apparatus is half filled with boiling water, a teaspoonful of the benzoin tincture added, and the cork tightly The short tube, which should be bent into a convenient curve, is then taken between the lips, and the patient inspires deeply, the outer air bubbling through the whole mass of fluid and reaching the throat thoroughly charged with the medicament. Used with reasonable care, there is no danger of scalding the mouth, and the apparatus is simple enough to be employed by the most ignorant. It may be used several times a day, and is in almost all cases most grateful to the patient and most valuable in reducing tracheal congestion and shortening the course of the disease.

Internal medication is of less value than

proper local treatment during the earlier stages of acute tracheitis, and in the writer's practice is largely limited to bromides, preparations of lactucarium, coca-wine, and quinine, the special indications for each of which are the constitutional rather than the local condition of the patient.

The use of cardiac depressants and vascular poisons, still so largely used in this disease, is considered worse than useless by the writer. Not only do they absolutely fail to give relief to local symptoms, but they increase the already intense tendency to take "fresh cold," and weaken the heart, which, in catarrhal subjects and city-bred Americans generally, is already below par. Convalescence has always seemed much retarded by such treatment, and the dangers of complications certainly not de-Of course this does not apply to cases in which the fever is of more importance than the local lesions, small doses of aconite being occasionally of the greatest value in such instances, especially in children. Instead of cardiac depressants, many patients need stimulation from the beginning of the disease, alcohol, in the form of milk-punch, being the most generally serviceable.

Counter-irritation is useful in all cases in which the trachea is much involved; tincture of iodine, freely painted over the sternal region once daily as many days as it can be tolerated, is especially valuable. In young children, or when the discoloration of the iodine is objected to, oil of amber, diluted, if necessary, and rubbed over the front of the chest with vigorous friction, is to be preferred. In more acute cases, involving the bronchi, large mustardplasters or turpentine stupes act more rapidly. In all subjects the chest must be carefully protected for weeks after the commencement of the attack, the wearing of evening dress by ladies absolutely forbidden, and reckless bathing interdicted; the oil inunctions may also be continued for a month or more with advantage.

Of much importance is the patient's care of himself during the attack. Doubtless confinement to the house is the best treatment, but this can seldom be enforced, and, if there is no elevation of bodily temperature and the weather be pleasant, is of less moment than is often supposed. Night-air is, however, very prejudicial, as is very damp or windy weather, and under such conditions a case of tracheitis always runs grave risks of serious complications by exposure. In mild cases of laryngitis, moderate use of the voice is rather beneficial than otherwise, seeming to prevent infiltration and consequent loss of voice, the throat noticeably "limbering up"

with use. But in severe attacks, where aphonia and pain are prominent symptoms, the voice should be used as little as possible, and all loud talking or public speaking absolutely avoided until it has regained its normal resonance.

The treatment of advanced cases of acute laryngo-tracheitis, where the disease has persisted for a number of weeks, and where cough and purulent expectoration continue, should be more stimulating in character than in the ear-Sprays and vapor inhalations are equally as valuable as at the beginning of the attack, but of course a much slower convalescence is to be expected, and the more stimulating remedies should be employed, oil of eucalyptus, ethyl iodide, and alum being especially All gargles, brushes, and probangs are at best useless in this disease, and all laryngeal powders are absolutely avoided in the writer's practice. Judging from the experience of many intelligent patients, not a few of them medical men, such applications act invariably as intense irritants, and always aggravate the symptoms and prolong the disease; their still extensive use in acute cases is a remnant of the dark ages of laryngology. The use of nitrate of silver in acute inflammation of the larynx or trachea, as has been advised by eminent writers, has not yielded good results in the writer's hands, and was years ago abandoned by him, and swabbing the trachea with a 60-grain solution seems more likely to cure the disease by ending the patient's life than by any slower process.

Internally, chloride of ammonium, which may be combined with bromides or with any of the stimulating expectorants, is decidedly the most useful drug in these subchronic cases; strychnine ranks next, and coca-wine and general tonics are frequently necessary. Persistent counter-irritation is expedient, and, as convalescence becomes established, a large share of fresh air and exercise is essential. A few cases, generally members of phthisical families, may continue to cough and expectorate at intervals for months, and if these symptoms are combined with progressive loss of weight and strength, even though slight in amount, the greatest care, or, preferably, immediate removal to a warmer climate, is of the first importance. Such cases, being essentially chronic in character, demand special treatment, which is too extensive a subject to discuss in the present article.

Serious complications are not frequent in acute laryngo-tracheitis, cedema of the larynx, spasmodic dyspnoea, and extension of the inflammatory process to the smaller bronchi and pulmonary alveoli occurring in a very small proportion of cases only.

Œdema can usually be controlled by astringent inhalations, but urgent cases are perhaps best treated by immediate scarification. The latter operation is both difficult and dangerous, hardly less so than tracheotomy, unless done by a trained expert with suitable appliances at hand. Scarification of the external edges of the aryteno-epiglottic folds is less likely to be followed by excessive hemorrhage, or to flood the larynx, than when their inner surfaces are incised. The lightly-given directions in many text-books are most crude and misleading, to a laryngologist often grotesque, and it is the opinion of the present writer that tracheotomy is to be preferred in cases in which the practitioner is more familiar with general surgery than with the larynx, and in which the urgent symptoms demand immediate relief.

Spasmodic dyspnœa can usually be relieved by hot inhalations, the steam atomizer, properly used, being especially valuable. Fumigation with the various stramonium and hyoscyamus pastilles and papers is often of great use; a hypodermic injection of morphine and atropine is usually followed by prompt relief. Occurring in children, it passes under the name of *croup*, and demands treatment too special in character to be described here.

Extension to the lungs occurs only in feeble patients, or in those enfeebled by prolonged illness, or after great exposure during the earlier stages of the disease. It can be prevented in almost all cases by early and proper treatment. Deep-seated bronchitis or catarrhal pneumonia call for the approved treatment for those diseases in detail. A long list of chronic conditions—nasal, aural, laryngeal, and pulmonary—may be directly lighted up by an attack of acute laryngo-tracheitis, but these occur too irregularly to be considered as usual complications of the disease. Nearly all may be prevented by rational therapeutics during the early stages of the primary affection.

THE RADICAL CURE OF HYDROCELE BY INCISION, APPLICATION OF AN IRRITANT, AND DRAINAGE.

BY W. JOSEPH HEARN, M.D., Surgeon to the Philadelphia and the Jefferson Medical College Hospitals.

POR many years the treatment suggested for the radical cure of hydrocele of the cord was so unsatisfactory that I was led to adopt the mode of treatment suggested by the title of this article. The first case was a boy ten years old, in the wards of the Jefferson College Hospital.

The cyst was almost behind the cord. There was great danger of wounding some of the vessels should I attempt to puncture the cyst. I incised the tissues overlying the cyst-wall, and treated the case in the manner detailed below. The boy was out of bed on the second day. From the satisfactory results following the operation on encysted hydrocele, I was led to adopt the same treatment for the tunica vaginalis. I usually employ the following method: After the parts are shaved and thoroughly cleansed with Johnson's etheral soap and washed with a hot bichloride solution, I freeze the line of incision at the most dependent part of the sac. For freezing I use the chloride of ethyl, which, by the way, is the most reliable and satisfactory agent of which I know.

I then, through the frozen line, make a free incision into the sac. Catching the edges of the sac with forceps, or needles armed with ligatures, that I may hold the sac up and open. I empty and thoroughly dry it out with sterilized cotton or gauze. Then with cotton or gauze saturated with pure carbolic acid (the crystals liquefied with heat) I mop the entire cavity of the sac. A small tent of iodoform gauze is inserted at the lower angle of the incision for capillary drainage. The tent is removed in from twenty-four to forty-eight hours. Both the sac and overlying skin are closed with catgut sutures, within one-half inch of the lower angle. An incision one inch long gives every facility for drying out the cavity. The line of incision is covered with aristol or iodoform, and then covered with antiseptic dressings and Purulent inflammation never ocrubber dam. curs if strict antisepsis has been observed.

Where the patient is timid or prefers it, ether can be used with great satisfaction, but it is not necessary. There is no more pain, and the recovery is just as rapid as in the carbolic acid injections, which I have always used and preferred previous to this mode of treatment.

The claims of this mode of treatment over injection is that it rarely fails in proper cases. We all know that the injections often do fail, even in hydrocele with thin sacs. Its success is due to drainage. The fluid necessarily left in the sac after tapping and injection often coagulates and prevents the complete collapse of the sac. This coagulated material I have often found in the sac of hydroceles that had never been operated upon. With the operation of incision it can always be removed. It is not claimed that this mode of procedure can take the place of partial excision or Volkman's operation in those cases where the sac is covered with calcareous plates or so thickened that the walls

cannot collapse. It is adapted only to sacs with thin walls, whether they be translucent or not. It is much more certain than injection, and a more benign operation, and results in a more rapid recovery than attends a partial excision of the sac. Should the patient be under the influence of an anæsthetic, and the sac be found thicker than anticipated, the operation can be extended to partial excision, as I was compelled to do in one case.

SALICYLATES IN THE TREATMENT OF PLEURISY WITH EFFUSION.

A Paper read before the Washtenaw County Medical Society at a Meeting in Ypsilanti, Mich., January 27, 1893.

BY GEORGE DOCK, M.D.,
Professor of Theory and Practice of Medicine in the University of
Michigan.

In the treatment of pleurisy with effusion the tendency has been to look with growing favor on the operative removal of the fluid as the safest, surest, and most rapid method. Next to this, probably, but far less frequently used, is the method of Hay, which is effective, but by no means pleasant, and sometimes hard to put in practice. But in the last few years testimony has accumulated in regard to a method of medicinal treatment which deserves a wider use than has been given it. I refer to the treatment by salicylates; and as the evidence regarding this method does not seem to be fully appreciated, I must ask your patience during a recital of the main facts.

To illustrate the want of appreciation, I have only to recall to your minds articles on the treatment of pleurisy, in which the salicylates are either not mentioned at all or are dismissed, as in the following (Garland, in the Climatologist, vol. i., No. 4, p. 245): "Drzewioski [sic] extols salicylic acid and salol in pleurisy, on the ground that this is a rheumatic affection, and he thinks that he has obtained very satisfactory results with these drugs."

In the excellent chapter on pleurisy in Lyman's "Practice of Medicine," the author, after speaking of pilocarpine, says, "In like manner salicylic acid or salicylate of sodium, in 10-grain doses every half-hour until a drachm has been taken every day, often produces excellent results, though, in consequence of the danger of cardiac depression, it is never safe to leave the administration of such remedies in the hands of inexperienced persons."

Strümpell, who, in the sixth edition of his "Lehrbuch," spoke of salicylate of sodium

only as a diaphoretic, in the seventh edition (Bd. i. p. 426) speaks of it as a diuretic, and gives it the first place among the diuretics to be used in pleurisy, "because in pleurisy a specific action is attributed to it. This is said to be true especially in those cases in which a rheumatic origin of the pleurisy may perhaps be accepted. Moreover, salicylate of sodium certainly has a direct diuretic effect."

My own observations have been limited. I had long settled down to the use of the aspirator, or, strictly speaking, a siphon trocar, and occasional experiments with concentrated salines or other drugs did not tend to induce me to adopt any other in place of the instrumental method when spontaneous absorption did not occur. From my short experience, however, and from the study of the literature that led me to make, I think I am quite justified in calling attention to the value of the salicylates in pleurisy.

It is perhaps due less to an admirable and wise conservatism than to other causes that Aufrecht's recommendation (in his "Path. Mittheilungen," Heft ii. p. 73, Magdeburg, 1883) of salicylic acid in pleurisy received so cool a reception.

Following this, Gasparini wrote on the subject (*Gazz. Med. Ital.-Lomb.*, 1885, 8. s. vii. 112). I have not been able to consult his article.

In 1886, Aufrecht again called attention to the subject (Berl. Klin. Woch., 1886, No. 10, p. 151). Aufrecht gave salicylic acid in five or six doses of a gramme each daily, keeping the patient in bed. In two or three days the quantity was reduced to 4 or 3 grammes, and it was continued eight or ten days. Aufrecht said he was far from asserting that a prompt result followed in all cases. But from his observations he concluded that with salicylate treatment in some cases of pleurisy a very rapid cure occurs, and that the average duration of treatment is much less than with the usual methods.

Since then Drzewiecki (Medycyna, Nos. 44, 45, and 46, 1887, and New York Medical Record, 1888, ii. 205), Herz (Wien. Med. Wochenschr., 1889, xxxix. 1084), Eugster (D. Arch. f. kl. Med., Bd. xlv. p. 441), Stiller (Orvosi Hetilap, 1889, No. 52, and Therap. Monatshefte, 1890, p. 139), Mercandino (Riforma Med., 1890, vi. 1730), Bieganski (Nowiny lekarskie, No. 11, 1890, and Virchow-Hirsch's Jahresberichte), Tetz (Medycyna, 1890, and Virchow-Hirsch; also full details in Therap. Monatsschr., July, 1890), Deri, who seems not to have been aware of Aufrecht's work, but discovered the value of sodium sali-

cylate by accident in 1885, and continued to use it in pleurisy (Pester Med.-Chir. Presse, 1891, No. 26, and Therap. Monatshefte, 1891, 447), Strizover (Medits. Obozren, No. 15, 1891, and Brit. Med. Journ. Sup., October 24, 1891), Edgren (Hygiea, 1891, 528), Churton (Int. Clinics, October, 1891, 84), and Köster (Therap. Monatshefte, 1892, p. 117) have reported favorable results, some of them on large numbers of cases.

In the mean time, Huber, whose work I shall speak of later, had also used the remedy with positive benefit.

In an interesting article in La Semaine Médicale, No. 4, 1892, it is said that Hayem, Talamon, and Albert Robin use and advise the salicylic method, though Sée said he had not seen the rapid and decisive action which has been ascribed to it (vide also La Sem. Méd., No. 19, Avril 20, 1892, p. 146, in which Sée denies the benefit of any internal medication in pleurisy).

Of the articles cited I have been able to see all but that of Mercandino, either in the original or in the abstracts to which references are given. Although it might be interesting to give extracts from them, I shall ask you to accept merely the results of my reading.\*

The number of cases subjected to the treatment cannot be ascertained, as some reporters do not give numbers, but merely say they have treated "many," or during a long period, etc. Out of seven reports, I gather a total of ninety-one cases. But in all the reports there is a notable unanimity, and the articles having the greatest fulness of detail leave no doubt as to the value of the method. I do not mean to say that the results were uniformly rapid and favorable, but the moderate language of Aufrecht is reiterated by others in equally candid words.

Köster (loc. cit.), one of the latest observers, as the result of an experience with the method in thirty-two cases, says that "the total effect is that the remedy does good," though admitting that its action is not constant. "Notwithstanding the latter limitation, the remedy deserves a trial in all cases of primary exudative pleurisy, especially so as it is comparatively safe. It should also be tried in secondary pleurisy, and may be tried in peritonitis and pericarditis."

<sup>\*</sup> Since writing this paper I find the following references, but have not been able to consult the originals: Cecchini, Riv. Gen. Ital. di Clin. Med., 1891, iii. 418; also Lavori d. Cong. di Med. Int., Milan, 1891, iv. 426-428; Georges Billard, "Action de la médication salicylique dans le traitement des pleurisies de nature séreuse." Paris, 1891.

A careful study of Köster's paper strengthens his statements. Out of thirty-two cases, all of more than moderate severity, and some inveterate and severe, aspiration had to be resorted to only three times, on account of threatening symptoms or non-absorption.

The following cases of my own illustrate the favorable action of the remedy:

CASE I.—G. B., laborer, aged twenty-six. One maternal and one paternal aunt died of tuberculosis; otherwise the family history is good. Three years before admission patient had bronchitis, lasting all winter. **Tuberculosis** was suspected, but he recovered entirely. December, 1891, had influenza, and soon after pleuritic pains and dyspnœa began. ter was so severe that patient could not work. There was also palpitation of heart, constant dry cough, and slight fever. During the last three weeks before admission all symptoms except pain had been worse. Sudden movements of the body caused sharp pain in liver region. There were occasional night-sweats and slight

B. was admitted to the University Hospital April 18, 1892. From the notes I quote: Man of large frame, with cyanosis of extremities and face. Thorax well formed; expansion almost absent over right side. Right side looks larger than left, but measures the same; the interspaces flattened out. Absolute dulness in front on the right side from third rib downward; above that, Skodaic resonance. In the back, dulness from the level of the sixth dorsal spine. Vocal fremitus absent over area of dulness. Liver dulness extends one inch beyond margin of ribs in right mammillary line. Breathing slightly blowing, but faint above third rib right; absent below. Puerile respiration left. Baccelli's sign not present. Diffuse pulsation in cardiac region, extending one inch beyond nipple; weaker or absent towards the end of inspiration; apex-beat strongest in fifth interspace, eleven centimetres from middle line. Heart-sounds vary in force; pulmonary second sound accentuated. Radial pulse 112, irregular. small; tension reduced. Respiration in horizontal position 24. Patient cannot walk length of ward without causing palpitation of heart and intense dyspnœa; in fact, must stop for breath. Aspiration by hypodermic syringe in right fifth interspace gave a slightly-turbid fluid containing leucocytes and red blood-corpuscles in moderate quantity.

Patient was left without medicine for two days, but with milk in addition to his diet. The urine of the second day measured 820 cubic centimetres. He was then given sodium

salicylate, 5 grains every four hours. The urine on the following days measured as follows: 1026, 810, 980 (milk stopped), 1100, 1100, 1000, 1150, 920, 960, 1200, 1000, 880, 860, 950, 1000, 1200, 1050 c.cm.

During the first four days the temperature rose above 100° F., once 101.2° F., and remained elevated a large part of the day. After that it never reached 100° F., and usually was between 98° and 99° F. The subjective symptoms rapidly subsided. The upper border of the dull area fell gradually, friction-sounds became audible between the third and fifth ribs, and breathing could be heard in the same area. At one time ægophony could be heard in the back above the dull area. By the end of the second week the apex of the heart had receded more than four centimetres to the right. tion audible all over lower part of right lung By the fourteenth day the patient could walk a mile in the open air without subjective dyspnœa. At this time fluid withdrawn by the hypodermic syringe gave the characteristic violet color with chloride of iron.

The patient left on the twentieth day, feeling well. There was partial dulness below the fifth interspace in the mammillary line, and the fremitus was weak, as were the breath-sounds, though the exudate was probably absorbed. The patient sent word early in the fall that he had continued well.

CASE II.—J. O., farmer, aged twenty-four. Family history and previous personal history good. In February, 1892, "caught cold;" had severe pain in left side, increased by deep breathing, fever, and cough, which kept him in bed five weeks.

Admitted to University Hospital June 1, 1892. On the afternoon of admission patient had a hard chill, with temperature of 102° F. Complained of pain in back and right side. There were friction-sounds over the right side. By the fifth day the line of dulness had extended to the fifth interspace in the right mammillary line, with constant distressing cough and pain on deep breathing.

Phenacetin was given in 2½-grain doses every two hours, but as it did not relieve the pain, codeine was given in small doses. The symptoms continued, and clear serous fluid was removed by the hypodermic syringē in the fifth interspace. On June 15 the patient was given salol, in 10-grain doses every two hours. Before this the urine had averaged during fourteen days 820 cubic centimetres per day, or, including the 15th, 818 cubic centimetres. After that it averaged during six days 1116 cubic centimetres, or, excluding the 15th, 1195 cubic

centimetres for five days. There was a rapid subsidence of all symptoms, and the patient left June 20. He wrote some months later, saying he had been well since leaving the hospital.

In regard to these cases, as in those reported by others, I do not forget the rapid spontaneous absorption of pleural effusions that sometimes takes place. But in Case I. no effort at spontaneous absorption had taken place, nor had active catharsis before admission relieved the condition to any appreciable extent.

In Case II. the disease was not of such long duration, nor so extensive; but here, too, the inference seems fair that it was the diuretic action of the drug that was influential in removing the fluid.

This brings up the question of the mode of action of the salicylates in pleurisy. The references to Strümpell already given are instructive, as showing how our views change. Although the diuretic action of these drugs had been observed long before, it was not until the painstaking experimental clinical work of Huber, in Eichhorst's clinic (*Deutsches Archiv für klin. Med.*, Bd. xli. p. 129), that such an action was recognized as prominent or important.

Huber found that pleurisy with effusion was one of the conditions in which the diuretic action of the drugs in question was most marked.

Not only was this so, but the diaphoretic action on which older writers laid stress, and on account of which Eichhorst himself thought sodium salicylate had been useful in pleural effusion ("Handb. d. spec. Path. u. Ther.," 2d ed., i. 505), was scarely observed. Careful estimation of the loss of weight by perspiration and by the lungs showed that loss was not materially influenced by salicylic acid one way or the other, and no notable diaphoretic action was observed in any of the fourteen cases so studied. Eugster (loc. cit.), out of thirteen cases, found sweating in only one, but other writers quoted in this paper speak of diaphoresis as occurring.

Huber also found that if the drug were given daily for several days, the diuresis gradually lessened in some cases, though the average excretion was larger. In other cases a steady rise took place. In one case, in a *potator* with cedema, excessive diuresis continued after stopping the administration of the remedy. In pleurisy, as in rheumatism, the diuretic action of salicylic acid was unaffected by the existence of fever.

The diuretic action of the remedy is mentioned by many of the writers named above,

but many of them assert that, in addition to that, salicylates have in pleurisy a peculiar or, as some say, specific action. A discussion on this point is closely connected with that of the etiology of the disease, since some of the authors named claim that the rapid curative action of the remedy demonstrates the rheumatic nature of the cases. With this reasoning I cannot agree. I do not think we can gather etiological or nosological conclusions from the action of remedies in a disease like pleurisy, and until we have a much clearer and more sharply defined conception of rheumatism than we have now, we gain nothing by speaking of the ordinary pleurisies as rheumatic. I exclude, of course, pleurisies complicating rheumatism, be their proportion large or small. But whatever be the cause or causes of so-called idiopathic pleurisy, it is possible there are some forms of the disease the causes of which are affected by salicylic acid or its salts, and from that point of view the presence of the acid in the effusion, found by my assistant, Dr. A. S. Warthin, is of great interest.

The experience so far gathered indicates that all pleurisies with serous effusion are proper for the administration of salicylates. But besides these, they may be used with advantage in dry pleurisy (Herz, loc. cit.), reducing fever and relieving pain. Köster (loc. cit.) also speaks favorably of sodium salicylate in cases in which friction is the only sign. Even in cases with tuberculosis in the lungs (Huber, loc. cit.), or in cases with hemorrhagic exudate (Köster, loc. cit.), the action of salicylates is sometimes favorable, and, in fact, Tetz (Therap. Monatshefte, July, 1890) claims that all secondary pleurisies are amenable to the treatment. I am not in favor of using salicylates or any other drug to distintinguish between effusions of various characters. The hypodermic needle is the proper instrument for that purpose, and should always be used, the proper precautions being observed.

One great advantage of the salicylic treatment, as has been emphasized by various writers, is that it can be used early. One need not wait until fever has subsided, or until an effusion has reached its maximum extent, but as soon as the diagnosis of pleurisy is made the drug may be administered, provided there is no contraindication on the part of the stomach or kidneys.

In regard to dose and mode of administration, I have already mentioned the method of Aufrecht.

Köster used the acid and the sodium salt alternately, and found no difference in their action, but in general, as one would expect, the patients took the salt better than the acid. Köster gave 1.5 grammes of sodium salicylate three or four times a day.

Drzewiecki also used the sodium salt in 2-drachm doses daily, giving a tablespoonful of a five-per-cent. solution every hour until signs of intoxication appeared, and then every two hours. He never saw collapse or cardiac weakness, but buzzing in the ears, anorexia, and repugnance to the remedy were constantly present, though they could be diminished by giving in milk. He afterwards used salol in 8- to 12-gramme doses daily, and found it better than the sodium salt in every respect.

Stiller and Strizover used smaller doses,— 3 to 4 grammes of sodium salicylate a day, and had very good results.

Huber, who used salicylic acid in four 1-gramme doses every alternate day, never observed delirium, dyspnœa, vomiting, or even repugnance to the remedy.

In my first case I used small doses purposely. The action might have been more marked with larger ones, and double the dose would be as easily borne. In general, however, I prefer salol to sodium salicylate, or any other salicylic preparation, and shall use it in future. With any preparation, Huber's plan of giving every other day might be useful.

In conclusion, we can fairly say,-

- 1. Salicylic acid and its salts are among the most effectual agents in the treatment of pleurisy with effusion.
- 2. In effective doses the remedy is harmless, and with proper selection of the preparation, and care in administration, causes little or no discomfort to the patient.
- 3. Salicylates act most promptly in pleurisies with serous effusion of recent origin or of long standing, but they are efficient in simple dry pleurisy, and often act favorably in secondary pleurisy.
- 4. There is no evidence that they are useful in suppurative cases.
- 5. The drug acts as a diuretic, but may have an effect on the pathological process, or on the cause of the disease.
- 6. Salicylates have a more marked action in pleurisy than have the diuretics commonly so called.
- 7. "The duration of the treatment with salicylic preparations is less than with diuretics, common salt, or roborant medication" (Eugster).
- 8. The remedy can be used at the earliest period, and favorably affects all symptoms.
- 9. The drug may be given in the form of the acid, or any of its salts, in doses of a

drachm of the former, or I to 2 drachms of a salt daily. In ordinary cases it is not necessary to give the larger doses, and 60 to 90 grains of sodium salicylate or salol daily may be considered full beginning doses, to be diminished one-third or one-half after the effect is manifest.

10. The ordinary precautions must be observed in giving the drugs, and during their administration the total amount of urine should be measured daily.

RESTERILIZED SPONGES, WITH BACTE-RIOLOGICAL INVESTIGATION.

By D. BRADEN KYLE, M.D.,

Assistant Demonstrator of Pathology and Instructor in Clinical Microscopy, Jefferson Medical College; Bacteriologist to the Orthopsedic Hospital and Infirmary for Nervous Diseases.

THE question of what is the best sponge to use in surgical operations still remains unsettled, some surgeons preferring the sponge, others the bichloride gauze. At the suggestion of Professor W. W. Keen, who had used sponges in a septic case, it was decided to investigate from a bacteriological stand-point the advisability of resterilization. A report of the investigation may be of use to others. As above stated, these sponges had been used in a septic case, and resterilized by soaking twenty-four hours in bicarbonate of sodium solution, and then placed in carbolic acid solution (strength five per cent.) for one week. Some of the sponges were large and flat,—"elephant-ear" sponges,—while the others were thick and firm Tubes were inoculated from in the centre. each by taking from the outer layer of the sponge a small portion and placing this in the agar-agar tube; then cutting the sponge open, a small portion was taken from the centre. The results were as follows: The flat, thin sponges showed no growth. With the thick sponges the experiments from the surface gave negative results, but from the thick, firm centre, from eight different inoculations, in from two to five days, at a temperature of 80° F., each showed marked growth. Stains made from these tubes showed numerous bacteria. By the process of isolation the micro-organisms of suppuration were found. The sponges were left in the carbolic acid solution for six weeks, then inoculations made as before, with practically the same results. The thick sponges were subjected to pressure while in the fluid, and inoculations made, with no change as to results. In making these experiments the same precautions were taken as would be necessary in any antiseptic or aseptic operation, the inoculating-needle, forceps, scissors, etc., being sterilized in a steam sterilizer, and the experimenter's hands being prepared by soap and water and brush,-special attention being given to the cleansing of the nails,—then washed in bichloride solution (1 to 1000). In each case confirmatory experiments were made, which proves that the infection did not come from any want of antiseptic precautions during the experiments. As to why the central portion of the thick sponges were not resterilized may be explained by the fact that when the sponge was used it was taken from the carbolic acid solution; being moist, it was in the condition requisite to rapid absorption, thus taking up during the operation blood and pus. blood coagulating, held in the fibrin the infecting bacteria. The sponge being thick, this central portion was not thoroughly dissolved, and we had left, even when placed in the carbolic acid solution, this infected centre. From this we might reason that, if this central portion resisted the dissolving action of the soda and the germicidal action of the carbolic acid, the surgeon would be perfectly safe in using the sponges in an operation. While this is true, yet during an operation the sponges are subjected to pressure and saturated with alkaline solutions which would possibly soften portions of the infected centre, and the aseptic field of operation be, unknown to the operator, converted into a septic one. These researches prove that the central portion had not been rendered aseptic by the process of sterilization, and possibly explains why we have infection following operations where every antiseptic and aseptic precaution has been taken. These tests would indicate that it would be much safer, especially in infected cases, to use sponging material which can be destroyed after operation, the best, possibly, being some form of gauze; also that, if sponges are to be used, the thin, flat sponge should be selected.

1632 CHESTNUT STREET, PHILADELPHIA.

ON THE TREATMENT OF HÆMOPTYSIS.

By Dr. Fr. Eklund, Stockholm, Sweden.

IT is well known that the coughing of blood is a symptom of many different diseases, and it is only necessary to remind the reader that it occurs in pulmonary consumption, in congestion of the lungs due to cold, in hyperæmia and stasis, and in valvular disease of

the heart, especially of the mitral valve, when secondary infarcts occur. Finally, the coughing up of blood may be due to the perforation of an aortic aneurism, to acute pneumonia, or occur as a result of pulmonary traumatism. Blood also comes from the mouth, it will be remembered. in cases of epilepsy, hysteria, hæmophilia, and purpura hæmorrhagica; sometimes it is due to vicarious menstruation or suppressed hemorrhoids. Of all these, by far the most important, of course, is the hemorrhage which is due to tubercular phthisis, both by reason of its severity and frequency, and it is my desire in this article to call attention of my colleagues in the profession to the correct treatment of this symptom, because it is of the utmost importance to the patient that proper treatment be instituted. We are told by authors who are supposed to be reliable that certain methods are to be carried out; for instance, in the "Therapeutisches Lexikon für Praktische Aerzte," von Dr. Anton Bum (Wien und Leipzig, 1891. S. 643), as well as in the "Real-Encyclopaedie den gesammten Heilkunde," von Albert Eulenburg. In the former of these cited works it is written, on page 643, "Man lasse den Patienten kühles Getrank (kaltgestellte Milch, Mandelmilch, Limonade) nehmen und gebe von Zeit zu Zeit Eis in kleinen Pillen zu schlucken;" and in the latter the author expresses his opinion on page 630 in these words: "Auch müssen die Nahrungsmittel möglichst kühl genommen werden."

During my earlier professional career as a general practitioner I regularly applied these measures, but it is a long time since I have discontinued this deleterious practice, for I could not avoid observing that with each icepill which was swallowed, or with each drink of cold milk that was taken, the bleeding increased; large quantities of blood were coughed It is clear that the irritation of the ends of the pneumogastric nerve in the mucous membrane must result in paroxysms of coughing at the same time that the cold produces contraction of the vessels of the stomach, and in consequence a corresponding dilatation of the blood-vessels in the diseased area. Under these circumstances, if the bleeding has stopped, one is forced to believe that such a favorable result was gained, not in consequence of the treatment, but in despite of the treatment. Furthermore, if one will but pay attention to the ingenuous statements of trustworthy, intelligent patients who have lungs susceptible to hæmoptysis, he will learn that there is nothing that they fear so much as the drinking of cold liquids, because the coughing up of blood is an immediate consequence of such a procedure. Persons who suffer from hæmoptysis should pay special attention to the maintenance of warm feet, as every neglect in this respect results in congestion of the lungs and coughing up blood. Washing the mouth and gargling with cold water irritates the ends of the fifth, vagus, and glosso-pharyngeal nerves, which all communicate intimately, and this increases expectoration. For all these reasons I have long desisted from giving ice-pills and cold drinks in cases of hæmoptysis, and I give instead lukewarm, mucilaginous potions, which have been very useful, and with which I have every reason to be quite satisfied. It is a popular custom with us here in Sweden to administer a tablespoonful of common salt, well dissolved in a glass of cold water, in the case of hæmoptysis. I most earnestly caution against this practice. The secondary effects will always be in the absorption of the great quantity of sodium chloride; the fragility of the walls of the bloodvessels is increased, and the susceptibility to hæmoptysis augmented. For these reasons it must be the object of the medical faculty to counteract energetically such a pernicious popular custom. On the other hand, it has been of great advantage to the sick to have a small ice-bag applied over the bleeding spot, as, for example, over the apex of one of the lungs. As far as the treatment with drugs is concerned, I wish, above all, to call attention to the fact that quinine should be administered as follows:

> R Sulphate of quinine, 3i; Extract of ergot, gr. xxx.

Make into forty pills, and take one or two pills twice to three times a day.

Or the following may be prescribed with advantage:

R. Fluid extract of hamamelis, 3ii; Fluid extract of cinchona, 3ii; Extract of licorice, 3iiss; Distilled water, Oi.

Shake thoroughly, and take a dessertspoonful to a tablespoonful every two or three hours.

Lead acetate is very much praised on account of its styptic properties, but I believe it is wise to refrain from administering it to young persons, because after its continued administration lead colic may be produced. In older persons this accident is not very likely to occur, but to be of value it must be given in large doses combined with the acetate of morphine.

### THE TREATMENT OF INCOMPLETE ABORTION.

BY EDWARD P. DAVIS, A.M., M.D.,
Professor of Obstetrics and Diseases of Infancy in the Philadelphia
Polyclinic; Clinical Lecturer on Obstetrics and Gynzecology
in the Jefferson Medical College; Clinical Professor of
Diseases of Children in the Woman's Medical
College of Philadelphia, etc.

IT is my purpose in this paper to discuss incomplete abortion not the result of criminal interference; complete abortion, or the expulsion of the entire ovum without the assistance of the physician, will not be considered.

Incomplete abortion is most common in cases where a physician is not summoned at the beginning of the process. If called in time, before considerable hemorrhage has occurred, the physician may be able to check the abortion, or, by judicious management, to secure the expulsion of the ovum entire. In either event, the prognosis for the mother's recovery is good, while in abortion checked by medical treatment the ovum may retain its vitality and secure adhesion to the lining membrane of the uterus.

Quite different is the case, however, where considerable hemorrhage with excessive pain has taken place before the physician sees his patient. He will frequently find her showing the effects of loss of blood, her clothing possibly stained with blood, and the birth-canal containing clots, or showing evidences of continuous but slight hemorrhage. Vaginal examination in these cases in multiparous women often reveals a portion of the ovum within the internal os uteri. If the genital canal be patulous, and the uterus be not firmly contracted, it will usually be possible for the physician to extract the remains of the ovum with his finger without especial difficulty. If the uterus be then thoroughly examined by the finger,the patient anæsthetized, if necessary,—clots and debris are readily removed from the interior of the uterus, and a hot intrauterine douche of creolin or carbolic acid, followed by the intrauterine application of an iodoform gauze tampon, will complete the treatment of such a

It not infrequently happens, however, that even in multiparous women, after the first free hemorrhages have occurred with separation of the ovum, that the membranes rupture, the embryo escapes, and the placenta, with possibly the membranes, remains behind. If an interval of a few hours elapses before the physician's visit, he will frequently find in such cases the uterus contracted to such a degree that the introduction of the finger within the uterine cavity is impossible without forcible

dilatation. Slight but persistent hemorrhage is often observed in this condition of affairs.

In primiparous women, the uterus may so tightly contract upon a retained placenta, or portion of an ovum, that the introduction of a large uterine sound may be impossible a few hours after the actual escape of the embryo has This condition of contraction of taken place. the uterus with retention of a portion of the ovum is among the most trying and dangerous conditions which the physician is called to meet in obstetric practice. Radical statements are frequently made to the effect that such a woman is in immediate and great danger, and that the physician should not rest until the uterus has been forcibly dilated and the ovum eradicated. While there is danger in delay, if that delay be not accompanied by the observance of antiseptic precautions and by a judicious study of the processes by which nature treats these cases, there is greater danger in unwarranted interference, inflicting traumatism upon the genital tract, and exposing the patient to the added danger of septic contagion. It is a familiar fact that the uterus seeks to expel a foreign body, and that, sooner or later, a polyp which has become separated from its base of nutrition, a placenta which has become separated, a dead fœtus, a tampon introduced within the uterine cavity, are expelled by spontaneous uterine contraction. If this hint be taken, the practitioner will abstain from forcibly dilating a uterus holding in firm contraction a retained placenta, but will take advantage of the spontaneous relaxation and expulsive efforts of such a uterus, which, sooner or later, will bring the retained material within convenient reach of his finger or instruments. It cannot be too strongly insisted upon that such a policy is unsafe without the observance of absolute cleanliness and, better, antiseptic precautions. As illustrating the principles of treatment in these cases, I report the following instances of incomplete abortion recently under treatment in the Maternity of the Jefferson Medical College Hospital:

Mrs. T., an anæmic, ill-developed woman, a multigravida, was brought by the ambulance to the Maternity in a condition of shock and collapse caused by profuse hemorrhage. The history given by the ambulance surgeon was that he had been summoned to the patient with the statement that she had just aborted at an early period of gestation; there were evidences of profuse and recent hemorrhage. The patient was made as clean and comfortable as possible, and brought at once to the Maternity.

On admission, she was exsanguinated; her

pulse scarcely perceptible at the wrist; the surface of the body cold and clammy; her respiration sighing and feeble. Slight hemorrhage was present from the genital tract. The resident physician, Dr. Spencer, at once made an examination, finding the cervix uteri impervious to the finger without the exercise of considerable force. He accordingly tamponed the os uteri and vagina with iodoform gauze, carrying the end of the strip of gauze just within the cervix. The patient was then stimulated by hypodermic injections of strychnine and digitalis, by the external application of warmth, and the internal administration of alcohol and hot fluids. Two and a half hours after admission, the patient had reacted, and complained of slight uterine pain. The gauze tampon had become saturated with fluid blood, and slight oozing appeared at the vulva. As the patient's condition was favorable, and as the persistence of uterine pain since her admission gave reason to hope that if a portion of the ovum had been retained it would be found accessible, the patient was placed across a bed and the genital tract thoroughly irrigated with a one-per-cent. mixture of creolin and hot water, at a temperature of 100° F. Digital examination revealed a small placenta in the cervix uteri, which had dilated sufficiently to admit the finger with ease. The placenta was removed by the finger, and the interior of the uterus thoroughly but gently curetted with the douche-curette, through which a stream of hot creolin mixture constantly flowed. Decidua and clots were thus removed, the oozing of blood ceasing completely. The uterus was then tamponed with moderate firmness with a single piece of iodoform gauze, a portion of which filled the vagina without distending it. The patient required no subsequent treatment. beyond the removal of the gauze twenty-four hours afterwards, and the washing out of the uterus at that time with the creolin mixture. An occlusion vulvar dressing was worn, and the external parts were carefully bathed with bichloride solution (1 to 2000) after each micturition and defecation. Examination of the placenta showed it to be at about the eighteenth week of gestation. The relaxed condition of the patient's general muscular system, and the profuse hemorrhage from which she suffered, were explained in part by an examination of the thorax, where evidence of pulmonary consolidation, probably tubercular in character, The placenta revealed no abwas present. normity upon examination.

The difficulties often experienced in dealing with primiparous women are exemplified in the history of the following case:

Mrs. C., aged forty, married less than a year, a woman of good general development and health, was not positive that she was pregnant; while engaged in household work, necessitating the lifting of heavy articles, she was taken with severe uterine pain and profuse hemorrhage. A physician was summoned, who diagnosticated threatened abortion. The hemorrhage, which at first had been profuse, gradually ceased, and on the following day the patient was brought to the Maternity in a carriage. On admission, it was found that a second free hemorrhage had occurred during the patient's transportation. The os and cervix were tightly closed, resembling those of the virgin woman. A slight but persistent hemorrhage was present. The vagina was moderately tamponed with aseptic cotton, thoroughly powdered with iodoform, and the patient kept quiet in the recumbent Twelve hours after admission the tampon was removed, the os and cervix remaining in the same impervious condition. vaginal douche of bichloride of mercury solution (1 to 4000) was then given, and a tampon of iodoform gauze was applied. Eighteen hours after this the tampon was removed, when it was found that the os and cervix had considerably softened and partially dilated. A portion of the ovum, not distinguishable, was found within the cervical canal. Hemorrhage commenced with the removal of the tampon; the vagina was again douched, and a gauze tampon applied, the end of the gauze being inserted within the cervical canal. Uterine contractions with abdominal pain ensued, and slight staining of the gauze tampon was observed. There was no active hemorrhage, and the patient's pain and uterine contractions ceased after an hour or two. Four hours later hemorrhage began again, when the patient was anæsthetized, the tampon removed, and digital examination made, revealing an ovum at about the fifteenth week of gestation partially engaged in the internal os. The ovum was removed with the placental forceps and finger, its complete removal being accomplished by the use of the douche-curette, through which a stream of hot creolin mixture constantly flowed. uterus was then tamponed with iodoform gauze, which was removed twenty-four hours afterwards and the uterus douched with creolin mixture. An uninterrupted recovery followed.

I desire to emphasize by the description of these cases the practical considerations which pertain in the treatment of incomplete abortion. Unless the physician is in possession of the complete ovum, no abortion should be considered complete unless the interior of the uterus has been thoroughly examined by the finger or by the curette, and has been demonstrated to be empty. The history given by the patient is valueless as to the appearance of clots discharged, except in so far as it indicates a previous occurrence of considerable pain and hemorrhage. If pain and hemorrhage can be proved to have occurred, the escape of the embryo has probably taken place. There remains, then, for the physician the treatment of incomplete abortion. Thorough antisepsis, patience, and accurate observation of the condition of the uterus are prerequisites for success in treating these cases. We prefer the douche-curette whose edge is not a cutting edge, but is as sharp as that of a paper-cutter. The advantage of this instrument, originally devised by Carl Braun, is the little damage which it may inflict upon the uterus, and the fact that it permits the administration of an intrauterine douche while the curetting is going In septic cases, where infected decidua and membranes are removed, the tampon of iodoform gauze may be replaced by a suppository, containing 60 grains of iodoform, and inserted into the fundus of the uterus; a narrow strip of gauze may be carried within the cervical canal, and the remainder packed about the os and cervix in the vagina.

Occasionally the uterus retains an ovum for an extraordinary period, its removal being finally accomplished without danger to the patient. Cholmogoroff\* reports two cases of missed abortion which were remarkable for the length of time during which the ovum was re-In the first of these cases the life of the embryo persisted for four months, while the product of conception was retained for seven months after the death of the embryo. entire pregnancy persisted for eleven months. In the second case the embryo perished at three months, but was retained for two months after death in the uterus. In neither case was operative interference indicated; the patients were kept under observation, and the expulsion of the ovum followed spontaneously. Both patients made uninterrupted recoveries. Very similar instances are on record which serve to emphasize the fact that radical interference, without the co-operation of uterine dilatation and expulsive contractions, is contraindicated in these cases.

The prognosis in cases of incomplete abortion depends upon the cleanliness and antisepsis observed in the care of the patient, and the

<sup>\*</sup> Zeitschrift f. Geburtshülfe u. Gynākologie, Band 22, Heft 2.

judgment displayed in interfering with her. In a series of eighty-four cases of abortion reported by Kuppenheim,\* of Heidelberg, in seven only did complications of any sort arise. The method of treatment employed was that which we have outlined, the finger being used, under careful antiseptic precautions, to empty the uterus, whenever possible, in preference to instruments.

In obscure cases where grounds for suspecting pregnancy exist, where pain, shock, and hemorrhage occur, the practitioner must keep in mind the occurrence of ectopic gestation with tubal abortion; such abortion is usually incomplete, the embryo and its clots partially escaping from the tube, while the chorion or placenta remains within its cavity. mirable description of such abortion has been recently given by Sutton. † An instructive case of tubal incomplete abortion in a primipara in early pregnancy is given by Renteln.† Her symptoms were abdominal pain, giddiness, and flooding, which increased in spite of rest and the administration of opium. The gradual development of a tumor led to a diagnosis of tubal gestation, and abdominal section confirmed the existence of tubal abor-These cases and many others of similar nature emphasize the fact that pain and hemorrhage, accompanied by the possibility of pregnancy in cases where the uterus can be demonstrated to be but slightly enlarged, and empty, should give rise to a suspicion of ectopic pregnancy and abortion, and lead, after due consultation, to exploratory abdominal incision to confirm a positive diagnosis.

A CONSIDERATION OF SOME MODERN
THERAPEUTIC AGENTS IN THE
TREATMENT OF DISEASES
OF THE STOMACH.

An Address delivered before a Clinical Meeting of the Alumni Association of the Jefferson Medical College.

BY DAVID D. STEWART, M.D., Lecturer on Clinical Medicine in the Jefferson Medical College.

As an indication of the therapeutic measures that I consider the most important in the treatment of gastric diseases, I may say that, if I were compelled by force of circumstances to restrict myself to a single remedy, and were permitted to make a choice, I should

unhesitatingly name lavage as that better meeting general indications than any other. Of course there would then be left untreated certain reflex gastric disturbances,—those of nervous anacidity and atony,—and cases also of ulcer and atrophy of the mucosa; but since the last of these is practically incurable, and ulcer requires no treatment, save recumbency and rectal feeding,-indirect therapeutic measures,—and the other ailments are only reached by attention to another viscus or to the correction of a neurosis, the remedy chosen would be applicable to nearly all other affections of the stomach, such as the various forms of catarrh, to dilatation, to cancer, and to cases of hyperacidity.

My second choice would be HCl. second because I consider it of less value than the stomach douche, but because its use would be much more restricted; for now only the various forms of catarrh, and dilatation not arising from pyloric stenosis, and cases of atony with lessened acidity would be amenable to treatment. Following the selection of lavage and HCl, I would make, as a third choice, the antacids, as indicated in a large group of gastric disorders to which attention has only in very recent years been called, and in which, in place of subacidity, hypersecretion of HCl is the chief symptom, resulting often in imperfect gastric digestion and always in pronounced intestinal ingestion, with emaciation and marked impairment of the general health.

Succeeding antacids, again, I should speak for other remedies, besides HCl and the douche. influencing secretion and propulsion, such as nux vomica or its alkaloid strychnine, and the intragastric application of electricity. actual utility of the last is still sub judice, but apparently has a promising though limited field in ailments characterized by impaired motility without obstruction a fronte, in those of diminished secretory activity without decided atrophy of the mucosa, and in the neuroses of the stomach. I should then speak for a digestive ferment, such as pancreatic extract,—an indirect remedial agent of great service in certain gastric affections. Pepsin I should not ask for, as I can think of no indication where it can be especially of value.

Lavage is of utility both as a cleanser of the gastric mucosa and as a correcter of abnormalities in the various gastric functions. Whether used simply to free the stomach from accumulated mucus in cases of gastric catarrh, mild or severe, with lessened or heightened acidity, or for the removal of masses of mucus and decomposing material, the concomitants of gastritis,

<sup>\*</sup> Deutsche Med. Woch., 1891, No. 53.

<sup>†</sup> Medical Press, 1892, No. 2793.

<sup>‡</sup> St. Petersburger Med. Woch., 1892, No. 16.

of dilatation, and of atony, the stomach douche is invaluable, and can be replaced by no other remedy. The utility in this direction has become the more apparent with the recently-acquired knowledge that various morbid conditions hitherto regarded as having origin and seat in parts remote from the stomach, and due to incompetence of other organs and tissues, actually arise from gastric auto-intoxication; for so now can be explained certain forms of cerebral disorder, such as neurasthenia, headache, insomnia, and epileptiform convulsions, and rheumatoid affections, such as arthritis deformans, and also diffuse neuralgic and rheumatic pains. That many-sided condition, too, termed lithæmia or uricacidæmia, of which so much has been written and so little is actually known, is suspected on more than slight evidence to have its origin in auto-infection from the stomach, as Bouchard has pointed out and Stockton has urged.\*

Indeed, so-called lithæmia, undeveloped or American gout, may now, in light of recent research, better be termed American dyspepsia, in which absorption from the stomach of the products of decomposition is the more likely cause of the varied complex of symptoms than the much-abused uric acid.

Ewald has asserted that at the age of forty there is rarely encountered normal glandular tissue in the stomach; this, true in Germany, is probably equally so elsewhere, and likely nowhere more than in this country, in which abuse of the stomach begins with life itself and ceases only with its extinction. In these days of hurried living, with little or no attention to stomach hygiene, rare is he who at a much earlier age escapes a mild chronic dyspepsia, evidences of which are ever ready to appear on slight deterioration in general health. The frequency of this,-gastric catarrh,-with no special symptoms referable to the stomach, can only be determined by gastric examinations in the supposed healthy. In instances in which I have been able to make observations on these,-not done with this as an object, but to determine the normal acidity at varying stages of digestion,—the frequency with which sub- or hyperproduction of HCl was encountered, associated with such evidences of catarrh as the presence of quantities of mucus, mingled with the removed stomach-contents, has forcibly impressed me with the probable rarity of a healthy mucosa. Lavage in some of these, to determine

the fasting condition of the stomach as regards the presence of mucus, showed a similar state of affairs, especially marked in the morning succeeding a late supper, even though ingested without other alcoholic beverage than a glass of beer. True, my studies on the supposed healthy have not been numerous, and the deductions therefrom are based on data derived from a class paying no special attention to gastric hygiene; but that same class comprises by far the majority of humankind, and is encountered in all conditions of life. Beaumont's observations on the robust young Canadian St. Martin long ago showed the extraordinary ease with which decided macroscopic evidence of gastritis will appear on slight provocation and frequently without symptoms referable to the affected organ.† That attacks of these acute affections, frequently repeated, eventually lead to chronic catarrh there can be no doubt.

The utility of lavage in these abnormal gastric conditions where no very marked catarrhal symptoms exist, but in which exterior ailments of gastric origin are often present, is as unquestionable as in the more pronounced cases of catarrh with ectasia. Daily morning douching to remove mucus and muco-pus in those in whom a dyspeptic tendency exists will serve to prevent the advent of chronic catarrhal gastritis. So much am I an advocate of the tube that I recommend its use to all those who, having dyspeptic symptoms, are given to late suppers or to even slight alcoholic indulgence. ‡

Apart from the utility of lavage in cases of simple catarrhal gastritis as a cleanser of the mucous membrane, the importance of which cannot be overestimated, it has a special effect, direct and reflex, upon secretion and motility. Its utility in gastrectasia is too well known to necessitate more than passing mention; no combination of remedies can approach it in effects. By lavage alone ectasic symptoms are promptly relieved, and in dilatation due to simple atony of the muscularis, without decided degeneration of the same, a cure often results; though the latter may be also hastened by the intragastric use of electricity and by nux vomica and hydrochloric acid. Regarding lavage, I have elsewhere stated that not only are the symp-

<sup>\*</sup> See the latter's valuable paper, "Misconceptions and Misnomers revealed by Modern Gastric Research" (Med. News, May 28, 1892).

<sup>†</sup> Such as generalized erythematous, aphthoid, and ulcerated patches, associated with secretion of mucus or muco-pus.

<sup>‡</sup> Similar results cannot be obtained from the ingestion of hot water or hot alkaline drinks. It is true that mucus, muco-pus, and food remnants may be thus swept into the duodenum, but solution of their products or decomposition is thus favored, and before extrusion of these through the emunctories takes place, toxic results occur.

<sup>&</sup>amp; Hare's "System of Therapeutics," vol. ii. p. 965.

toms occasioned by stagnation of food ameliorated or removed and more or less tone restored to the relaxed and overstretched muscle, but the gastric absorbent and secretory functions, often profoundly affected, are stimulated to renewed activity. In consequence of these beneficial effects, even in cases of incurable stenotic dilatation, which prior to commencement of lavage have been emaciated and cachectic in appearance to a high degree, an extraordinary change for the better may appear in the course of a few weeks or months, though the amount of food taken has been but slightly in excess of that formerly ingested.

In cases of hyperacidity, with or without hypersecretion, brilliant results are also often obtained by lavage with simple water, or that containing antacids. Cases of this sort so cured are perhaps sufficiently common not to be detailed. I may here, however, speak of two, both of which are more than ordinarily instructive from several points of view.

In one, a robust male, S. T., aged thirtytwo, gastric symptoms were somewhat in the background and only elicited by direct inquiry. The ailment for which I was consulted was generalized neuralgia. For about ten years the attacks had been limited to the head. occurred irregularly bi-weekly, affecting indifferently either side. The pain was always of great severity, often accompanied by undue prominence of the eye, by unilateral sweating, and by a smaller pulse on the affected side. Compressing the nucha always diminished the pain. Subsequently, while it continued to affect the head, as before, vague neuralgic pains occurred in various parts of the body; at one time in a limb, at another in the loins, and again and most obstinately in the testicles.\* The appetite was always large and often voracious, especially at the time of headache. Eating diminished, temporarily, the cephalalgia. Other gastric symptoms—of which he had little, when the extent of the acidity is considered—were burning pain in the epigastrium, occurring an hour or so after meals, diminished by eating or by large draughts of water; sour eructations soon after meals; constipation. The stomach during fasting was always found to contain from twentyfive to one hundred cubic centimetres of a fluid with an acidity of from twelve to thirtyfive, which responded decidedly to Günzburg's solution, and showed no evidence of lactic acid.

One hour after Ewald's test meal the acidity † was extraordinary,—on one occasion 180, with 0.60 per cent. of free HCl. Organic acids were usually absent. He at first refused to submit to lavage, and was treated with antacids in full doses, carefully-regulated diet, daily morning use of sodium sulphate and bicarbonate in hot water. The improvement was but temporary. Subsequently, on the appearance and persistence of the diffuse neuralgia, especially the testicular (only temporarily benefited by the various measures tried), systematic daily lavage was instituted, at first with sodium bicarbonate, one drachm to a pint of hot water, and subsequently with unmedicated warm water. No headaches or other neuralgic pains have occurred since the douche was regularly employed.

The second case...D. McV., aged sixty-three -was quite similar as regards the gastric condition. The stomach contained free HCl, which also existed in decided excess after a trial meal. Symptoms of gastric disorder had been present for about two years. He had lost twenty-five pounds in weight in four months, due in all probability to duodenal indigestion occasioned by the hyperacidity, and had been compelled to abandon work (as an engineer) several months before placing himself under treatment. He was debilitated; heart was feeble and radials rigid. His symptoms were chiefly gastric. There was severe pain in the epigastrium, occurring two hours after eating, and at night, independent of food. There were also sour eructations, obstinate constipation, troublesome flatulence, and pronounced insomnia. He was melancholic, and believed his ailment incurable. Full doses of sodium bicarbonate, three to four hours after a meal, and a daily laxative dose of a mixture of sodium sulphate, phosphate, and bicarbonate were at first prescribed. He improved, but the improvement was not maintained, though treatment was continued. Daily morning lavage was then instituted with warm alkaline water. The amelioration, or indeed cure, was instantaneous. No gastric symptoms have occurred since douching was begun several months ago. Lavage is still continued. patient has since continued in robust health.

The occasional untoward effects from lavaget

<sup>\*</sup> The testicular neuralgia was supposed by a surgeon, to whom I sent him for examination as to the urethral condition, to be due to irritation from a very slight stricture and urethral hyperæsthesia. Systematic bougieing was practised, but with only temporary benefit.

<sup>\*</sup>One hour after Ewald's trial breakfast the normal acidity, due almost entirely to free HCl, should be between 40 and 60.

<sup>‡</sup> Recently reviewed by Fenwick in *The Practitioner*. April, 1892. Such as convulsions in the hysterical and tetany in gastrectasia, syncope and sudden death in the predisposed as a result of abrupt alteration in the intra-abdominal pressure, perforation in cases of ulceration.

occur so rarely that though the likelihood of their occasional incidence should always be borne in mind, fear of them should not deter a resort to the douche in any case in which its use seems indicated. I have never seen ill results from the use of the tube, though I have employed it in all varieties of cases, including ulcer, for diagnostic purposes. It should not be used for lavage in ulcer, and should rarely be employed for diagnostic purposes in the same, especially if a tendency to hemorrhage exists. In cases of feeble heart, large amounts of fluid should not be introduced or removed suddenly.

In a sphere more limited than lavage there is no remedy more distinctly useful than HCl, and conversely none more provocative of harm if the indications for its administration are not carefully attended to. Its utility as a therapeutic agent has long been recognized, but for a considerable period its employment was altogether empirical, until the discovery that HCl was a natural constituent of the gastric juice, and essential for vigorous peptonization. sequently, though more enlightened notions governed its administration, based on these data, its hap-hazard employment was still general.\* until the brilliant application of the stomach-tube to diagnosis by Leube paved the way for its more rational application. investigations of Leube having shown that a deficiency of HCl was very common in gastric disorders, its use became general in all cases of so-called dyspepsia, many of which were probably those of hypersecretion of HCl, a sensory, secretory neurosis not then recognized, but subsequently discovered by Reichmann (gastrosuccorrhœa) and carefully studied by him, by Jaworski (hyperacidity with, or oftener without, hypersecretion), and others.

Prior to the discovery of these secretory neuroses great difference of opinion naturally existed as to the utility of HCl, it probably very frequently being employed in cases of hyperacidity, as well as in those of diminished secretion, as examination of the stomach contents was not then general, the methods employed lacking the convenience and exactness of those of to-day and the soft tube being then unknown. The recognition of the existence of these neuroses, in which harm only could result

from straining attending violent vomiting, and hemorrhage in and from the same and as a result of variation in intragastric tension.

from its use, and of certain other ailments, such as atrophy of the mucosa, in which little benefit could accrue, has, without diminishing its extraordinary utility in certain cases, narrowed the indications for its employment, as it has also rendered necessary the application of the tube for their revelation.

When one considers the ease with which an insight may be obtained into gastric disorders by the above-named measure, by methods in themselves most simple of manipulation, and the intelligent therapeutic application that can be made of these, the lamentable ignorance yet existing regarding diagnosis and treatment of stomach-diseases is a matter of won-The acceptance of the statement by many, that the use of the tube is necessary to arrive at the indications for the administration of HCl, would doubtless lead to the withdrawal of this remedy from their armamentarium, and yet this would be better than that it should be indiscriminately prescribed in all cases of so-called dyspepsia. † Certain common tokens of impaired gastric digestion, when present, may be said to furnish general indications for its administration. These are a sensation of weight in the epigastrium occurring shortly or immediately after a moderate meal of proteids, succeeded, perhaps, by gaseous, rancid eructations; anorexia or an easily-satisfied appetite, with nausea succeeding eating; a coated, flabby tongue showing the imprints of teeth. These symptoms, common, with a variety of others, in gastric

<sup>\*</sup> Thus, Trousseau, though convinced of its great utility in certain forms of stomach-disorder, could formulate no better indication for its use than to recommend recourse to it in those cases in which alkalies failed.

<sup>†</sup> As an indication of the bearing of gastric-juice examinations on HCl therapy I may mention my own case. Early in the autumn I had suffered from impaired digestion, through diminished secretion, greatly relieved by 3i doses of dilute HCl after meals. The symptoms eventually disappeared; HCl was discontinued. Recently dyspeptic symptoms recurred. These were, especially, epigastric sensations of weight, discomfort, and acidity, appearing about an hour after meals. The tongue was flabby, showing the imprints of the teeth, as was usual. These symptoms were supposed to represent diminished secretion of HCl with presence of organic acid fermentation. Without a stomach examination, HCl was again begun, but at once discontinued on an aggravation of the symptoms occurring. On the day following two examinations of the gastric contents were made. Three hours after a lunch of bread and butter and panned oysters, the total acidity was 90, with very marked HCl response (Günzburg's). No quantitative estimation made. On the same day, two and a half hours after a dinner of beef-stew, corn, bread and butter, sherry, and a cup of tea, the total acidity was 108. Günzburg's response was decided up to thirty dilutions. Mintz's test = 0.32 per cent. free HCl; but a trace of lactic acid; no acid salts. Subsequent examinations, made daily for a short time, always showed increased HCl hyperacidity. Here, within a few months, a complete reversion of the secretory condition had occurred.

atony and catarrh signify deficient gastric secretion, and yet all may be absent and a state of subacidity exist, and several present with normal or hypersecretion of HCl.

Though it is generally accepted that the only indication for the employment of HCl is deficiency in its secretion, therapeutists are by no means in accord as to the precise mode of action, the tendency in Germany being to doubt the utility of its administration as a digestant if secretion of HCl be much diminished, any benefit then resulting being supposed to accrue from its antiseptic action or through its effect on gastric motility and its stimulating influence on gastric secretion. an antifermentative and antizymotic HCl takes high rank. Putrefactive changes in the stomach originating through stagnation of food with deficient secretion, permitting the development and multiplication of bacteria, with the presence of irritating organic acids and poisonous leucomaines, cannot occur with a small excess of free HCl. The growth of pathogenic fungi, such as the bacillus of cholera and of enteric fever, are similarly inhibited by traces of this acid, the life of the organisms ceasing when the amount of the latter equals a certain percentage.\*

The influence of HCl on the gastric peristole is still sub judice. Leube's experiments led him to believe that the increased acidity towards the termination of gastric digestion was the main cause of the onward progress of the chyme into the duodenum. The observations of others in this direction, notably Fleishner,† do not support Leube's contention, and it is also negatived by several clinical facts.‡

The ability of HCl to aid in the transformation of pepsinogen into active pepsin, and labzymogen into lab-ferment, is well known, and its utility as a direct stimulator of its own and pepsin secretion has in recent years also been urged, but on no direct evidence; it being, however, accepted that, in those with simple diminution in secretion, after a course of treatment by HCl, the digestion continues to improve after its withdrawal.

Reichmann and Mintz, believing this practically the only result to be obtained by the administration of HCl, undertook a series of experiments to determine this point, a recently-made preliminary report of which is favorable.

In a series of cases in which little or no free HCl existed (one in a half-hour after Reichmann's trial breakfast), increased secretion resulted in most of them on the administration of HCl after meals for some days. Examinations were made before taking and after discontinuing the HCl. They note that but one other experiment of this sort—that of Riegel's ||—has been reported. In Riegel's case free HCl had been constantly absent, even after several months of lavage; but by the administration of full doses of HCl for fourteen days, free HCl eventually appeared in the contents of the fasting stomach.

Regarding the utility of HCl as a digestant, the trend of opinion seems to be against it, but on very inadequate evidence, the notion prevailing that sufficient cannot be taken when secretion is much diminished to exert any digestive action, the dose administered, though large, disappearing in forming combinations with the albuminoids and salts of the food, and not manifesting itself as free acid even shortly after its ingestion. Reichmann, convinced of this as the result of experiments which he regards as conclusive, but which were, however, evidently made on cases with atrophy of the gastric tubules,\*\* no longer uses HCl as a digestant. My own opinion has been entirely contrary to this view, because of practical results obtained by the administration of HCl in cases of nervous dyspepsia and chronic gastritis, in which little or no free HCl has usually been present in the gastric secretion. I have frequently found in cases in which, after a trial meal, the total acidity was trifling, and the test for free HCl negative or slight, that immediate relief was obtained from symptoms of indigestion, such as weight in the epigastrium and nausea after food, by a full dose of acid. Instantaneous relief thus obtained could only be explained on the supposition that the acid exerted some digestive action. In these cases a certain amount of HCl is of course secreted, but often barely sufficient to more than wholly combine with

<sup>\*</sup> Kitasato (Zeitschrift f. Hyg., Bd. iii.) found that the development of cholera bacilli ceased in an acid reaction 0.06 per cent. to 0.08 per cent. HCl. Typhoid bacilli required a much greater percentage,—1½. Hamburger's figures (Centralbl. f. Klin. Med., 1890, No. 24) are much smaller than the last. It would appear that Kitasato had used bouillon, the albuminoids and salts of which combined with the free HCl. (See also Reichmann and Mintz, Wiener Klin. Woch., June 23, 1892.)

<sup>†</sup> Berlin. Klin. Woch., No. 7, 1887, quoted by Reichmann and Mintz, Wien. Klin. Woch., June 23, 1892.

<sup>‡</sup> HCl hyperacidity is occasionally met with in atony with stagnation of the ingesta. In certain cases of hyperacidity the raised acidity causes spasm of the pylorus and retention of the chyme.

Loc. cit.

<sup>||</sup> Deutsche Arch. f. Klin. Med., Bd. xxxvi.

<sup>¶</sup> Loc. cit.

<sup>\*\*</sup> Deutsche Med. Woch., No. 7, 1889.

the albuminoids and salts present in the food. The excess being furnished artificially, and slight continued secretion occurring, digestion advances more rapidly than it otherwise would.\*

I have recently undertaken some experiments to discover if this view, contrary to that of Reichmann, Boas, and others, but the result of extensive clinic experiments, is not correct; my observations, though yet but preliminary and based on only three cases, bear out my assumption. Two of these are cases of chronic gastric catarrh, the third one of nervous sub- or anacidity. In each of the former free HCl is often not to be obtained in the gastric secretion one hour after Ewald's trial breakfast. When present it exists in minute traces. In the third case, a response to tests for free HCl could never be obtained, even after this acid had been administered for months.†

CASE I.—Miss M. A.; chronic gastric catarrh, with atonic gastrectasia.

December 23, 1892.—One and one-sixth hours after Ewald's test breakfast withdrew thirty cubic centimetres of moderately well dissolved roll, containing much mucus. Congo paper browned; total acidity 18; HCl, by Günzburg's solution, present; Mintz's test = 0.009 per cent. free HCl. Lactic acid and erythrodextrin decided; acid phosphates present; lab test positive. Three other earlier observations, made at weekly intervals, substantially agreed with the above.

December 24, 1892.—Withdrew forty-five cubic centimetres one and one-sixth hours after Ewald's breakfast, at the termination of which 40 drops of dilute HCl had been taken. Contents more fluid; flow more readily through the tube. Congo paper markedly blued; total acidity 26. Günzburg's solution, decided response up to eleven dilutions. Mintz's test = 0.047 per cent. free HCl. Lactic acid = faint trace; acid phosphates present; lab test positive.

December 25, 1892.—Forty-five cubic centimetres withdrawn. Conditions same as above; 45 drops dilute HCl taken one hour before withdrawal; total acidity 30; 0.036 per cent. free HCl; traces of lactic acid; lab test positive.

Case II.—Mrs. F.; chronic gastric catarrh, with incipient atrophy; atonic dilation.

December 24, 1892.—One and one-sixth hours

after Ewald's breakfast withdrew sixty cubic centimetres of moderately well dissolved roll, with little mucus. Congo paper very faintly blued; total acidity 25. Günzburg's solution == response ceased at third dilution. Mintz's test == 0.01 per cent. free HCl; digestion test negative; lab test positive; lactic acid in abundance; acid phosphates and erythrodextrin present. In this case previous observations had been made at intervals of six to fourteen days for four months; the latter ones agreed substantially with the above, with the exception that no free HCl existed in that of six days before. The acidity then was 43, due to lactic acid and acid salts.

December 25, 1892.—One and one-sixth hours after Ewald's test breakfast and 30 drops dilute HCl, forty-five cubic centimetres withdrawn. Roll well dissolved; but little mucus. Congo paper decidedly blued; total acidity 32. With Günzburg's solution, response up to thirteen dilutions. Mintz's test = 0.077 per cent. free HCl. Digestion test positive, though retarded; no lactic acid; traces only of erythrodextrin; lab test positive.

CASE III.—Nervous anacidity. Mrs. S. R. E. December 22, 1892.—Withdrew thirty cubic centimetres thick, only partly dissolved roll one and one-fourth hours after Ewald's breakfast. Congo paper unchanged; total acidity 6; no response to Günzburg's solution, though filtrate concentrated. Starch, erythrodextrin, and lactic acid absent; acid salts, traces; lab test negative; that for lab-zymogen decided; digestion test negative, though HCl added until it could be recognized as free acid. Three previous examinations were made in this case with similar results; not even the faintest traces of free HCl could at any time be detected. Acidity always lay between 5 and 8. The contents withdrawn were but partly fluid, and clogged the tube. Frequent examinations were impossible because of the discomfort and prostration the use of the tube occasioned in the patient, who is an hysterical neuras-

December 29, 1892.—Withdrew sixty cubic centimetres of quite fluid contents one and a quarter hours after Ewald's test breakfast. One and a half teaspoonfuls of dilute HCl had been taken,—the first dose immediately after eating the roll, the second fifteen minutes later. Congo paper faintly blued; total acidity 20. Marked response to Günzburg's solution. Mintz's test = 0.018 per cent. free HCl; lactic acid absent; acid phosphates decided; erythrodextrin present; lab test negative, as before, but that for lab-zymogen decided; digestion test

<sup>\*</sup> I have cases under observation, in which much diminished secretion of HCl is habitual, that have been taking HCl for months. The immediate relief from symptoms of indigestion always obtained by it causes them to continue taking it.

<sup>†</sup> Tests, of course, being always made several days after discontinuance.

positive without the addition of HCl, but very retarded.

Comment on these cases is unnecessary; evidence is so apparent of the utility of HCl administered for the purpose in which its efficiency is mooted.\*

Whether similar results could be obtained after a more extensive meal than Ewald's trial breakfast, especially that consisting largely of albuminoids, is yet to be determined. I am now investigating that point. In all likelihood the amount of acid administered would have to be increased, unless the direct influence of the food taken promoted additional secretion.

Still, even should the latter not occur, these experiments show that HCl, administered in medicinal doses in certain cases of even pronounced diminution in secretory activity, may be relied upon not to disappear from the stomach, contrary to the prevalent opinion, and may, therefore, in these be expected to assist digestion. But, under such circumstances, were its recognition as free acid impossible, secfetion of HCl not being entirely in abeyance.—as occurs probably only in advanced atrophy of the tubules,-benefit may still be expected from the administration of HCl, and its trial should not be omitted. For, apart from its stimulating effect on the secretory function, which may tend to delay the advent of atrophy, it must also assist in the saturation of the albuminoids of the food, and thus, also, in the partial peptonization of the latter. For, as Ewald first showed, even though a certain percentage of free HCl may be essential for active and complete digestion, at least partial peptonization may occur without it, that imbibed by the albuminoids sufficing for the latter purpose.

Regarding the dose and time of administration of HCl, a word must be said. If used as an antizymotic or antifermentative, because of combinations formed with albuminoids and salts of the food, a larger amount is, of course, necessary on the full stomach than when this viscus is empty. Notwithstanding this, for obvious reasons, its utility is greatest as an antifermentative when administered after food, except in cases of total suppression of secretion,

when, if resorted to, it should be ingested fasting; for after food a quantity too large for administration would be necessary to show itself in any efficient percentage as free acid. After meals, in such cases, a second antizymotic, such as one of the naphthols, should be chosen. When indicated as a secretory stimulant, HCl may be administered in small doses before meals,† or, preferably, in much larger postprandial ones, that advantage may be also taken of its ability to synergize digestion. When actually indicated for the latter purpose, it is useless to administer less than a drachm of the dilute acid, in divided doses, largely diluted in water, at intervals of from ten to twenty minutes, the initial dose being taken at the termination of the first half-hour after meals. This last is important, that saccharification of starches be not too early impeded. I regard a drachm of the dilute acid so taken as a moderate dose, and frequently prescribe upward of 2 drachms where decided diminution in free HCl exists. No harm can result from these doses in cases of subacidity. It is, perhaps, needless to remark that nothing can be expected from a single dose of 10 to 15 drops of the dilute acid, so often prescribed, combined with a correspondingly enormous quantity of pepsin. This much at least may be said of these small doses, that if no good obtains from them, at least no great harm can result, even when given, as they often unwittingly are, in that form of disordered digestion which we now know is caused by much heightened secretion of HCl.

In cases of hypersecretion of HCl,‡ with or without succorrhoa, no one remedy is of such distinct utility as lavage, especially with alkalinized water, as has already been detailed. The symptoms also often disappear in the less severe cases, without lavage, by the protracted use of antacids. These may be administered as soon after food as indications of hyperacidity appear, such as epigastric burning and pain, with acid eructations. Antacids are more distinctly useful, when symptoms do not especially demand their earlier employment, towards the completion of gastric digestion, about four or

<sup>\*</sup> Case III. had taken HCl in full doses irregularly for one and a half years, with marked subjective evidence of benefit. Nausea and distress after meals were invariably relieved by it. Prior to each stomach examination, HCl was discontinued for a week; previous to the last examination none was taken for fifteen days. Evidences of its utility as a digestant are most manifest in this, the least promising of the three cases.

<sup>†</sup> Alone, or in combination with common salt or with strychnine, both of which also promote secretion of HCl.

<sup>‡</sup> It must not be forgotten that a neurosis very frequently underlies these. This must itself receive attention if permanent curative effects are to be obtained. Among the drugs indicated, bromides, which may be combined with antacids, are often of service; especially strontium bromide, as that least irritating. Cannabis indica and cocaine, alone or in various combinations, are also beneficial for the local hypersesthetic condition.

five hours after a varied meal, as the food is entering the duodenum. Though their administration soon after a meal is often demanded by the severity of the symptoms, the ill results of complete neutralization of the gastric juice at this time must be borne in mind. Small doses only should then be given; subsequently, benefit rather than harm results from complete saturation of the gastric acid. Neutralization of the alkaline intestinal fluids is thus prevented, and more complete duodenal digestion of starches and fats, habitually imperfect in these cases, is thus promoted.\*

The utility of faradism and galvanism in the treatment of diseases of the stomach I have so lately considered elsewhere † in some detail, that little remains to be here stated. The measure of exact value of electricity, unlike that of the other therapeutic means considered, is still undetermined, experiments with the direct application being of too recent date and too limited to permit the formation of definite conclusions as to immediate value and permanence of result in all save a limited number of gastric ailments in which it has been tried. It is accepted, however, that the intragastric application of both faradism and galvanism influences the secretory, motor, and absorbent functions.

The faradic current is apparently especially valuable as a secretory and motor stimulant, and is well worthy of trial in cases of lowered acidity, whether of inflammatory or nervous origin, not yielding to ordinary treatment, and especially in cases of nervous sub- or anacidity with atony, in which, if secretion is not stimulated, motility may be, and thus, as in atrophy of the mucosa, if decided degeneration of the musculature has not occurred, the preservation of propulsive power permits fair nutrition through duodenal digestion. In simple atonic dilatation no remedy is apparently of greater value than an intragastric application of faradism, combined with other approved measures,

such as lavage and the administration of HCl; a cure, with renewed secretory activity, may in most cases be expected. In cases of obstinate gastralgia, direct gastro-galvanization has seemed of service, after other measures adopted to relieve have failed.†

In that class of cases of total anacidity or of pronounced subacidity, such as is encountered in advanced gastric catarrh, in typical atrophy of the tubules, and in certain of the neuroses of the stomach, in which there is reason to believe that the administration of HCl is useless as a secretory stimulant or as a digestant, a great deal can be done, both symptomatically and to obviate the ill results of undue retention of undigested food in the stomach,-atony and perhaps subsequent dilatation,-by the administration after meals of an active pancreatic preparation. In these cases of diminished or absent acidity, through saccharification of such carbohydrates as the ptyalin comes into contact with, through the process of partial solution of food by mastication, insalivation, and by the aid of fluids ingested, ultimately more or less completely occurs in the stomach, a certain amount of the starches in vegetable food remain bound by a glutinous envelope, the unaided intragastric solution of which may be impossible because of deficient or absent secretion. In cases such as these an active pancreatic extract, which ordinarily would be operative but for a short time if administered after meals, may be expected to exert its triple action throughout the whole digestive phase, and not only to complete the transformation of starch into sugar, but also to peptonize proteids and to digest fats. Nor is a limitation here reached for pancreatic extracts.

In cases of enfeebled gastric digestion in which HCl is secreted in diminished amount, and yet in which peptonization, though very incomplete, occurs, HCl should not be omitted from the therapy, but a pancreatic preparation may still be given. The latter must then be administered immediately before or during the early part of the meal. Under these circumstances it will exert digestive activity for an hour or more, depending upon the amount and variety of food taken, until extinguished by the subsequent presence of traces of hydrochloric acid.

<sup>\*</sup> Albuminoids are also incompletely peptonized in cases of hyperacidity in which hypermotility exists. This latter combination of hyperacidity and hypermotility is not uncommon, heightened peristalsis, as well as symptoms of local sensory irritation, being often originated by the irritating effects of the superacid gastric secretion. In these cases, before peptonization has far advanced, the neutralization of the gastric acid by the alkali of the intestinal mucous membrane and of the pancreatic secretion causes precipitation of both the gastric and pancreatic ferments, with permanent cessation of proteolysis.

<sup>†</sup> Hare's "System of Therapeutics," vol. ii. pp. 923 et seq., 963 et seq. The full technique, which is simplicity itself, with the recently-devised gastric electrodes, is there given.

<sup>‡</sup> See Emhorn's recent paper, New York Medical Record, January 30 and February 6, 1892.

<sup>§</sup> Apart from their ability to predigest foods, which I shall not here touch upon.

<sup>||</sup> It must be borne in mind that normally, in the early stage of gastric digestion, acidity is low and due to acid salts and to a small percentage of lactic acid, so that

Should the initial dose of the latter be delayed until a half-hour or longer after a meal, a fair opportunity will have been afforded for complete starch digestion and partial solution of albuminoids.

A word remains to be said regarding the administration of pepsin. Judging from its popularity as a remedy for indigestion,\* the necessity for it seems great indeed. And yet its wholesale prescribing, so general in this country,† rests upon a delusion without other foundation than total misapprehension of certain physiological facts.

Though it is unquestionable that both pepsin and acid are essential for proteolysis, and that neither can display digestive activity without the other, the inutility of pepsin administration in conditions demanding a synergist to digestion is indicated by the facts that the pepsin-secreting cells, unlike those forming HCl, are very numerous and widely distributed in the stomach. As a consequence, though HCl is often either much diminished or totally absent from the gastric secretion in various affections of the stomach, pepsin is never habitually so except in advanced atrophy of the tubules, in which latter condition the administration of neither HCl nor pepsin can be of service as a digestant. In cases in which HCl is absent from the stomach, other than those of complete tubular atrophy, pepsin can still be readily obtained from its secreting glands in quantity sufficient to act as a digestant by means of hydrochloric acid, as Jaworski§ first pointed out.

digestion of starches begun in the mouth, not being perceptibly interrupted by these conditions, continues, ceasing, however, when the acidity due to free HCl reaches a few thousandths of one per cent. This, after a generous and varied meal, does not occur for an hour or more. The period of lessened acidity is often much prolonged in conditions in which secretion of free HCl is diminished, and may continue through the whole course of gastric digestion in certain ailments, such as in nervous anacidity and in atrophy of the tubules, in which cases no free HCl, and often no traces of the organic acids, are present.

\* And especially largely prescribed alone, or, as curiously, in combination with soda, bismuth, lactic acid, pancreatin, or very minute doses of dilute HCl.

† I have recently been informed by one of the largest drug-manufacturing houses in this country, the purity and activity of whose pepsin takes high rank, that pepsin is gaining in favor with the medical profession daily, so that its present consumption in this country is at least one hundred per cent. greater than it was two years ago.

‡ Except as regards the formation of syntonin and a small amount of protoalbumose by HCl alone.

§ See Deut. Med. Woch., 1887, Nos. 36, 37; Münch. Med. Woch., 1887, No. 33. Jaworski's diagnostic test

Pepsin does not pre-exist in the cells of the gastric glands, but is secreted as a proenzyme pepsinogen or propepsin, requiring but the stimulating action of hydrochloric acid to promote ready conversion of the ever-present proenzyme into the active ferment.

A consideration of the foregoing, together with the additional fact that pepsin acts by mere catalysis, possessing extraordinary continuous activity, little being consumed in the digestive process, unlike the case with hydrochloric acid, shows that the modern extensive prescribing of pepsin is, to say the least, largely one of supererogation. It also indicates the absolute inutility and unscientific use of this enzyme alone or even without conjunction with full doses of hydrochloric acid.

The benefit, therefore, supposed to result from its administration, when not of psychical origin, due to the delusion that a sovereign panacea for indigestion is being taken, probably usually accrues either from the dietetic regimen coincidently prescribed, or from the ingredient—acid or alkali—with which pepsin is combined.

When amelioration in symptoms results after use of pepsin with an alkali, || such as sodium bicarbonate, with which it is often unscientifically prescribed, the case is in all probability one of hypersecretion of hydrochloric acid. In such, of course, pepsin, as well as hydrochloric acid, is already present in abundance in the gastric juice, so that neither is indicated as a remedy. The soda is, however, of great utility as an antacid. Subsidence of discomfort thus produced is, however, erroneously attributed to pepsin.

This much, however, may be said for the administration of pepsin, that, though it may be superfluous, it is also innocuous, except in so far as it is substituted for another remedy, such as hydrochloric acid, actually indicated.

2620 NORTH FIFTH STREET, PHILADELPHIA.

for atrophy of the stomach is founded on this fact. Two hundred cubic centimetres of  $\frac{n}{10}$  HCl solution is intro-

duced into the stomach and removed in half an hour. Secretion of pepsin and lab-ferment, or transformation of their proenzymes into the active ferments, is so readily produced by this measure, that should evidences of these not now be found, a diagnosis of atrophy of the mucosa is justifiable. This test is described in Verhandl. des vii. Congress. f. Innere Med., 1888, p. 272.

|| An utterly incompatible combination, since pepsin is thus promptly destroyed. It requires the presence of but 0.05 per cent. of sodium carbonate to render pepsin permanently inert. (See Chittenden, *Medical News*, February 16, 1889.)

## The Therapeutic Gazette

BDITED BY
H. A. HARE, M.D.,
GENERAL THERAPEUTICS.

With special departments under the charge of G. E. DE SCHWEINITZ, M.D., OPHTHALMIC AND AURAL THERAPPUTICS, AND

EDWARD MARTIN, M.D.,
SURGICAL AND GENITO-URINARY THERAPEUTICS

#### GEO. S. DAVIS,

Medical Publisher, Box 470, DETROIT, MICH,

Philadelphia, 714 Filbert Street,

SUBSCRIPTION RATES FOR 1802

THERAPEUTIC GAZETTE (postage included)\$2.00
THERAPEUTIC GAZETTE with MEDICAL AGE 2.50
THERAPEUTIC GAZETTE with WESTERN MEDICAL
Reporter 2.50
THERAPEUTIC GAZETTE with BULLETIN OF PHAR-

THERAPEUTIC GAZETTE with AGE and LANCET... 4.00

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136
Gower Street, London. Price 108. Remittances may be made either by Postal Order or Stamps.

Price to Foreign Subscribers direct (postage included), \$2.50 (to shillings). English postage-stamps received on remittances.

Editorial communications should be addressed 222 South Fifteenth Street, Philadelphia. Articles intended for the Original Department of the Gazette will be accepted only with the understanding that they are contributed to it exclusively.

Authors will receive reprints in pamphlet form, without charge, provided the request for them be written on the articles sent.

Business communications should be addressed to the Publishers.

#### Leading Articles.

# THE TREATMENT OF CUT-THROAT WOUNDS OF THE AIRPASSAGE.

IN an interesting paper contributed by Morris to the Lancet, December 24, 1892, are reported a number of cases of penetrating wounds of the neck,—that is, those which open into the larynx or trachea, in which treatment by accurate coaptation was most successful.

In all of these cases the technique of modern antiseptic surgery was carried out in its fullest detail, and by means of carefully-applied stitches the parts were restored as nearly as possible to their normal position. These stitches were of catgut, and were not passed through the mucous membrane. The head was held in a position of fixed flexion by means of appropriate bandages and propping with pillows. Healing was as complete and rapid as is usual in the or-

dinary incised wound. This rapidity of union allowed of rectal feeding being employed up to the time that the patient could swallow without danger of opening his wound; hence feeding by a tube passed into the pharynx or œsophagus was not necessary, and, as the result of the accurate coaptation, contracture and stricture of the air-passage or food-passage did not take place; nor in any case did there result a permanent, or even a temporary, fistula communicating with the air- or food-passage.

Ouite in accord with this teaching is the advice given in "An American Text-Book of Surgery" (Keen and White). These authors hold that in cases of penetrating cut-throat wounds, if seen early, the treatment should consist in approximation of the divided tissues, the deeper parts being united with catgut, while for the integument catgut or silk may be used according to fancy. Other text-books, however, discountenance the immediate closure of penetrating wounds. Their teachings are, perhaps, founded upon the results obtained before the advent of cleanly methods, when healing of even non-penetrating wounds was rarely obtained without suppuration, when an opening into the trachea or pharynx invariably.implied general infection of the wound surface, and when closing the external opening always caused infiltration of septic matter beneath the deep cervical fascia.

The admirable results obtained by Morris and others in immediate suture, and, indeed, all the teachings of modern cleanly surgery, are so clearly opposed to the encouragement of the healing of such wounds by granulation, that even the authority of well-known text-books will no longer justify the surgeon in following out such treatment.

#### THE THERAPEUTIC ACTION OF THIO-SINAMINE.

ONE of the latest drugs claiming recognition at the hands of those who deal with surgical tuberculosis is thiosinamine. Unna (Monatshefte für Praktische Dermatologie, Bd. xv. No. 7) has noted extraordinary results from its subcutaneous injection.

It is a crystalline, chemical product of constant composition, soluble in alcohol and ether. In Unna's hands injection excited reaction in tubercular areas, no effect whatever being produced upon the general system.

Upon lupus its action was very favorable, ulcers skinning over and tuberculous projections disappearing.

Upon scar-tissue, particularly that causing deformity and disability by contracture, the results of the injection were extraordinary. The scar softened, yielded, and in a number of cases function was entirely restored. Thus, in one instance, where the fingers were drawn tightly into the palms of the hands, these injections enabled the patient to resume work. In another case, where the knee was flexed and useless from cicatricial contractions, the injections enabled the leg to be brought almost entirely straight. Other equally striking cases are reported.

Upon chronic enlargement of lymphatic glands the results of injection were equally satisfactory. One case of syphilitic adenitis, however, yielded not at all. In most cases, as the result of injection, there was noticed profuse diuresis. This occurred without albumin or any other pathological product in the urine.

Some cases of corneal opacity of long standing were also cured by these injections, and they seemed always to enormously increase the absorbing functions of the lymphatics. Finally, the injections increased the appetite and enabled the patients to take on fat.

In the practical application of this drug a fifteen-per-cent. alcohol solution is employed. This is filtered in order to free it from all mechanical mixture, and two injections a week are made of 2 to 4 drops of this mixture. Injections of this strength produce no more constitutional effect than would so much water. The rule to be observed in administering this medicine is that the more extensive the diseased area the smaller the dose. When there is but a moderate amount of diseased tissue the minimum dose should be given first, and the quantity should be gradually increased. largest dose given was about 30 minims. Stopping the treatment for two or three weeks, after local reaction was no longer excited, and again beginning it, local reaction was as marked as though the remedy had not previously been administered. The injections are usually administered into the muscular tissue between the shoulders.

Unna makes for this drug extraordinary claims,—namely, a direct specific resolvent action upon local tuberculosis; marked increase in diaphoresis and diuresis; a resolvent influence upon scar-tissue far more powerful than that of any of the remedies already known; a powerful tonic effect upon the system at large.

If this remedy accomplishes a small amount of what is claimed for it, it is destined to become one of the most valuable adjuncts to surgical therapeutics. Deformity and disability as the result of scarformation is too often beyond the surgeon's help. Plastic operations are sometimes impossible, or if performed are often unavailing. Thiersch skin-transplantation is without permanent good effect. If, then, by means of a perfectly safe drug, deformity and disability which are beyond the reach of the knife can be relieved, a benefit will be conferred on thousands who are now suffering without hope.

If the drug proves efficient in this respect alone, it will prove of more value to the surgeon than any medicament which has been put forth in recent years. Unna's high scientific reputation justifies a thorough trial of the remedy, even though recent experience with remedial agents lauded by others of equal standing does not encourage the belief that the profession at large will meet with Unna's brilliant success.

#### THE TREATMENT OF TYPHOID FEVER.

HE title which heads this article is so hackneyed that the reader will probably wonder what additional statements can be made concerning the treatment of enteric fever. Perhaps it would have been better had the article been headed "Typhoid Fever not to be treated," for in the majority of cases we are convinced that entirely too much medicine is administered during the course of this dis-Those who have listened to lectures on the practice of medicine by Professor Alfred Stillé find during their active professional life that the advice which he gave them concerning the treatment of typhoid fever has been thoroughly endorsed by their own experience. there is one disease above another in which drugs can be abused to the injury of the patient, it is assuredly this one.

There can be made no greater mistake by the practitioner of medicine than to blindly follow the directions which he may find in some text-book. In the first place, no writer can detail the minute symptoms which, together with the major ones, tend to direct his medication in a given line, and there is no case of typhoid fever, so severe as to demand the employment of drugs, which runs a course so exactly like another case that the treatment of one fits exactly into the treatment of the other. In many cases of typhoid fever there is no doubt that the business of the physician is to require absolute rest in bed, the rigid maintenance of a milk diet, and the administration of a dose or two of a remedy which may be indicated by certain symptoms when they arise. The wonderful results obtained in Europe and in this country by the employment of the cold-bath treatment of typhoid have depended very much upon the fact that the physician has avoided the administration of drugs, and has therefore neglected (if we may use such a term) to do harm to his patient.

Fever is, of course, the symptom above all others in typhoid fever which steps to the front as the one to be treated, and every case of typhoid fever that we see impresses us with the fact that the temperature should be controlled by external remedial measures rather than by the administration of drugs. If the disease is mild in its manifestations, it is only on rare occasions that the temperature will rise sufficiently to require more for its reduction than spenging the patient with alcohol or tepid If it does rise so high as to become a dangerous element in the case, a much colder sponging may be given; and, finally, if the temperature is persistently high, it may be necessary to give the patient the cold pack or the cold bath. Certainly, in this country, we see instances of typhoid fever running a mild yet typical course, in which the temperature is not sufficiently high to require the routine employment of the bath.

Baths cannot be employed by routine any more than can drugs.

It is a mistake also to carry out the directions which have been given in certain text-books to administer stimulants from the very beginning of the disease until convalescence is well established. While apparently good reasons have been advanced for this constant employment of alcohol, careful comparison of cases which have not received the stimulant have shown that their course through the disease has been more smooth and comfortable than in those who have received it, and alcohol, like all other drugs, should be reserved as a remedy of peculiar power and activity for combating any complications or particular symptoms which, coming on suddenly, indicate its employment. Aside from the general harmfulness of its constant administration, we are deprived of a powerful ally in the event of an emergency, if the patient's system has become, to some extent at least, accustomed to its employment. We have been directed by other writers to administer to the patient in the earlier stages of the disease, and, for that matter, through most of its course, iodine, carbolic acid, thymol, or similar substances which are supposed to act as intestinal antiseptics and are used to modify the severity of the attack. We confess that we have never seen any particular benefit

arise from the employment of these remedies, unless they were employed with the idea of combating the diarrhoea, which was excessive, or to overcome tympanites, which caused dangerous distention of the abdomen. We believe that, like alcohol, they ought not to be administered, excepting when indications for them arise, and we are certain that we have seen one or two cases of diarrhœa in typhoid fever which have become worse while thymol was administered, and better as soon as the administration of the thymol was stopped. believe, too, that the routine administration of turpentine, either in the middle of the attack of typhoid or at the end of the disease, during convalescence, is objectionable in many cases. Here, again, its constant employment simply deprives us of a valuable remedy when we most need it.

The patient suffering from typhoid fever, to be treated rationally, must be visited by his physician no less than once a day; must not be given any medicine, day in and day out, through the entire course of his disease; but must be prescribed for on individual occasions as the various aspects of the disease are presented to the observer. More important than all, the typhoid patient needs no treatment unless he has some indication for the administration of the drug. He is bound to travel through the storm which has attacked him, and the most that the physician can do is to guide him through that storm, preventing him from running upon shoals or rocks, by the removal of dangerous symptoms as soon as they arise. It may be necessary in many instances to give some simple placebo, in order that the patient and his friends may not gain the erroneous impression that nothing is being done; for it is very difficult to convince the sick man or his relatives that the disease must run a given course, and that no medicines should be given unless marked indications for them arise. Probably the best medicament to be used in this way is a mixture containing a few drops of dilute hydrochloric acid with a little pepsin, prescribed in one of its fluid forms, as, for example, Pepsin Cordial. This tends to remove the coating from the tongue and to provide digestive juice in the stomach to take the place of that which the stomach should produce, but which it never produces in fevers, more especially if they are of the asthenic type. If hemorrhage comes on, it is best to employ an ice-bag applied over the region where it is believed the hemorrhage arises, and to give internally hard pills or capsules of considerable thickness, which contain three grains of Monsel's salt or the ferri subsulphatus of the U. S. Pharmacopœia.

For the tympanites a turpentine stupe is, perhaps, the best general treatment, particularly if a few minutes after its application the patient is given a full rectal injection of the milk of asafætida, or soap and water, containing a few drops of turpentine, well stirred up so as to avoid any concentrated action upon the rectal mucous membrane. Under extraordinary circumstances only is it necessary to administer anything by the mouth to overcome the tympany; but, if it is necessary, doses of 5 to 10 grains of salol, or 3 to 5 grains of thymol, may be given in capsule. Compressed pills of salol, or even coated pills of salol, unless they are very soft, should not be given in typhoid fever, because, owing to defective secretion in the gastro-intestinal tract, they will probably not dissolve, and if not, act as foreign bodies upon the ulcers with which they come in con-

It is important to remember, when sponging the patient, that this sponging will not only relieve his temperature, but, by removing peripheral irritation, may produce a comfortable sleep. More important than all, when he is sponged an ice-bag should be applied to the head to prevent cerebral congestion, and the skin should be rubbed by the bare hand of the nurse in order to bring the blood to the surface and to prevent internal congestion.

The treatment of typhoid fever upon the basis which we have already named—medication only for particular indications—will give far better results to the physician than the mere blind following of any directions which he may have been taught while a medical student, or may have read of in a text-book.

# THE TREATMENT OF CERTAIN TYPES OF KERATITIS AND OF CONICAL CORNEA.

N a recent number of the THERAPEUTIC GAZETTE we had occasion to review the chief therapeutic points found in Mr. Carter's analysis of ten thousand cases of diseases of the eye seen in private practice in so far as affections of the conjunctiva are concerned. In a continuation of this analysis (Lancet, December 17, 1892), Mr. Carter considers the affections of the cornea, the total number of which amounted to four hundred and ninety-two. His tables show that the female sex is more liable to superficial and interstitial keratitis than the male sex, and, as is well known, that women,

much more commonly than men, are afflicted with conical cornea. On the other hand, the greater number of corneal injuries occurred in men.

In the condition denominated superficial keratitis by Mr. Carter, and which must include several types of inflammation of the cornea, if the disease is not severe, the treatment consists of the instillation of atropine, gr. i, and cocaine, gr. iv, to the ounce, followed, when the irritation has subsided, by an ointment of yellow oxide of mercury. It is very evident that Mr. Carter is prejudiced in favor of cocaine, but it must be a general experience that the drug, temporarily pleasant and helpful, may be ultimately detrimental to the pursuit of an uncomplicated course in many forms of keratitis. Just as good results will follow the employment of the atropine without the cocaine, and hence there is no use running the risks imposed by the latter drug. The correction of errors of refraction as soon as practicable after recovery, and always before allowing resumption of eye-work, is a wise measure, and is insisted upon by Mr. Carter. There is no doubt that the strain of uncorrected ametropia, especially astigmatism, is responsible for many of the relapses of superficial keratitis, and the prescription of suitable glasses is just as important, under these circumstances, as is the fulfilment of the evident indications for local medication and general measures. In some instances cure was hastened by closing the eye with a vertical strip of gelatole plaster, so applied as to fasten down the cilia of the upper lid to the cheek and to arrest all friction movement. The same purpose may be accomplished by a light bandage, and if this is made of some elastic material, for instance, knitted worsted,-the even pressure which it exerts is grateful to the patient, and the immobilization of the lids of good effect in hastening a cure. Whenever photophobia becomes confirmed, it maintains, in the opinion of Mr. Carter, a morbid condition which resists the action of remedies and which requires surgical interference. He divides with a curved bistoury the orbicularis muscle at the outer canthus, using an anæsthetic, if necessary, and making a clean cut through all the tissues, conjunctiva, skin, and muscle, from the outer canthus quite up to the margin of the orbit. free bleeding speedily ceases, and the relief is usually prompt. Arsenic is commended as the most useful drug to diminish corneal irritability, and Carter always administers it in the absence of other special indications, or when these have been fulfilled. We are in entire accord with this practice, and have seen many cures of various types of keratitis for which arsenic deserves a full share of credit. Mr. Carter does not mention his preference for any preparation, but in our experience the best results have usually followed Fowler's solution, given in much the same way as it is administered in chorea; in a few instances arsenite of sodium has seemed the preferable preparation. If Mr. Carter fails to obtain relief from the measures thus far described, he performs peritomy.

Among the 92 cases of interstitial keratitis, 31 occurred in males and 61 in females. Among the 31 males, the right eye alone was affected in 2, the left eye alone in 5; and in the 61 females, the right eye alone was affected in 8, the left eye in 12. Hence the figures illustrate the greater liability of the female sex and the greater liability of the left eye. The fact that interstitial keratitis is more frequent in females than in males has been pointed out a number of times,—for example, by Mr. Power, as the result of his examination of the ward books of the ophthalmic department of St. Bartholomew's Hospital. But the greater immunity of the male sex from this disease does not always appear; for instance, in the statistics of A. W. W. Baker and J. B. Storey, among forty-eight cases, there were twentyfour instances of each sex. In many of Mr. Carter's cases the evidences of inherited syphilis were unquestionable, but in several the signs were wholly wanting. In these he has observed, as have other surgeons, that the type of the disease was unusually severe.

He believes that the principles of treatment should always be the same, -namely, building up the general health as much as possible, the administration of mercury internally in small doses and for long periods of time, the application of only the most soothing remedies, and, when one eye alone is affected, complete rest for the other. He deprecates the application of irritating solutions, -- for example, sulphate of zinc and nitrate of silver,—and believes that in many instances they are responsible for irremediable damage to the cornea. If there is protracted photophobia, it may be mitigated by confinement to a dimly-lighted but wellventilated room; never, however, without due care that proper exercise is accomplished. As the photophobia subsides he advises the use of spectacles filled with glass of a peacock-blue tint, which, when tested by the spectroscope, is found to exclude the red rays of the spec-In bad cases he urges the performance of iridectomy.

With reference to the treatment of a slough-

ing ulcer which occupies the central portion of the cornea, and which must leave behind, even under the best of circumstances, a central opacity, Mr. Carter argues as follows: Inasmuch as natural perforation diminishes the tension and healing takes place spontaneously, he prefers to obtain practically the same result by iridectomy. He selects for the purpose the locality in which the artificial pupil, which must in any case be needed to restore vision, seems to be most useful. Iridectomy is considered especially advisable in older patients. Sometimes the operation is rendered needless by supporting treatment and the application of eserine, together with closure of the lids by bandage or plaster. Scraping and irrigation of the ulcer as a preliminary measure is also advocated, especially in young subjects. effect of eserine in checking a sloughing ulcer is believed to be due to its power in controlling the migration of white blood-corpuscles. When the ulcer is peripheral, bodily rest, generous diet, closure of the lids, and, when healing commences, the application of a morsel of the vellow oxide of mercury ointment are recommended. Curiously enough, no mention is made of the actual cautery, of Saemisch's section, of the various modifications of the latter operation, and of the direct application to the ulcer of certain germicides and caustics,—for example, nitrate of silver and carbolic acid,-although, as is well known. Mr. Carter has advocated elsewhere very strongly the use of nitrate of silver to check the spread of a sloughing ulcer.

His experience in regard to conicity of the cornea leads him to say that in all cases in which the affection is progressive, and in which the general condition of the patient permits it, an operation is demanded. The experience of one who has had so wide an experience in public and private practice, is of the utmost importance, and hence his method is recorded in a closing quotation:

The eye being completely cocainized and the pupil brought fully under atropine, one of Bowman's corneal trephines is set to such a depth that it will not be likely to go through the membrane, and with it a circle of tissue is cut out over the apex of the cone, of a size corresponding to the amount of projection. The circle of corneal tissue marked out by the incision is then peeled off by forceps and the exposed surface touched with a fine point of nitrate of silver, a solution of chloride of sodium being applied immediately afterwards to prevent the spreading of the caustic. The lids are closed with plaster and the patient kept in a dimlylighted room, atropine being daily applied.

There is a resulting cicatrix on the apex, densely opaque, which resists further extension of the conicity. After all irritation has passed away, the pupil is fully dilated with atropine, the best curvature in the cornea is determined, and an optical iridectomy performed of such a V-shape that its base shall be at the pupillary margin and its apex towards the periphery of the iris. Finally, to quote Mr. Carter's apt expression, when "the eye has forgotten the iridectomy," the cicatrix is tattooed with Indian ink.

It is interesting in this connection to compare Mr. Carter's advice with the paper of Dr. Knapp, an abstract of which appears in another number, and in which the actual cautery is advocated for the cure of conicity of the cornea. It would, further, be interesting, before reaching a final judgment as to the best method of treating this affection, to have comparative statistics as to the ultimate visual result obtained in cases which are seen early and have been treated by the instillation of eserine and the wearing of high sphero-cylindrical combinations, as has been especially advocated by Thomson and Wallace, of this city, and in those on which some form of operation has been performed. Mr. Carter evidently has not much opinion of any other treatment except operative interference, and thinks it is usually vain to manage the affection as if it were progressive myopia requiring the strict enforcement of functional rest. Certainly in many cases of conicity eserine and sphero-cylinders are useless, but there is sufficient evidence to show that in selected cases painstaking efforts in this direction meet with brilliant successes, and apparently, at least, the progress of the conicity is stayed.

### Reports on Therapeutic Progress.

ASCITES IN CONNECTION WITH GYNÆ-COLOGY.

In the Archiv für Gynäcologie for 1892, PROFESSOR A. GUSSEROW, of Berlin, has an interesting article on "Ascites in Connection with Gynæcology," of which the following is an abstract:

A high grade of ascites has often been observed occurring in connection with affections of the genital apparatus or of the peritoneum, which seem to occur by preference in women. In these cases at first even the skilled diagnostician cannot say anything more than that he has a

general ascites (non-encapsulated). There is a lack of the symptoms which occur in ordinary ascites; there is no ædema in other parts,—for instance, of the legs, the abdominal wall, or of the outer genitals. A patient often comes to us like a skeleton, with the exception of a very prominent abdomen, which makes us think at once of an abdominal tumor, in the modern sense of the word,—i.e., a new growth. special characteristic of this kind of case is the absence of all the ordinary factors, one or more of which are so often found to have given rise to ascites. So, then, in the first place, a careful examination must be made for disease of (1) the circulatory apparatus, (2) the liver, (3) the kidneys; and only those cases of ascites in which such etiological factors can be positively excluded come, properly speaking, into the domain of gynæcology, and it is only these, and none others, that Gusserow is discussing. Most gynæcologists are now agreed upon the best method of handling such cases. fortunately, the ordinary practitioner is too apt to follow the older method, a circumstance which sometimes proves very unfortunate for the patient. He still clings to the idea that an attempt should be made to ascertain the cause of the ascites by means of a puncture, or, what is worse, he is apt to make the treatment consist in further punctures, and to continue these till the death of the patient. Puncture is, in my opinion, in every way inadvisable. It is true that we, in common with other gynæcologists, for many years taught that puncture was always necessary for the diagnosis of the abdominal tumor. This idea they have now given up, and we consider it quite as absurd to make a puncture for diagnosis in the cases of general or free ascites. This new doctrine I have taught for years, and the same holds good for tapping to take away the greater part of the fluid. It used to be the custom to make a puncture with a "Pravaz syringe," and draw off a little fluid, have it examined chemically and microscopically, in order to make a diagnosis of the kinds of ascites and of its probable origin. Although much work has been done on the subject, there are many cases, and especially nearly all of these cases of "general ascites" which we are discussing now, where such an examination will give us no information at all. Better than this is tapping for the removal of the greater part of the fluid, since we thus get a better chance for palpation of the abdominal and pelvic organs, and may possibly be able to detect the cause, which was concealed by the amount of the fluid. "chance" of making a diagnosis frequently led

to the adoption of this treatment, which, as we said, was often not the best for the patient. The reasons against this method are,—I, the uncertainty of being able to make a diagnosis, even when the fluid is drawn off; 2, the faint chance, even with the best asepsis at our command, of setting up a septic process (this latter danger has now, it is true, been reduced to a minimum, but we have, nevertheless, seen cases of erysipelas and of septic peritonitis from tapping); 3, the liability of injuring vessels, and of consequent internal bleeding; 4, the impossibility of drawing off all the fluid by tapping, and the almost certain return of the fluid, which, perhaps, will necessitate tapping again and again.

Gusserow has given up both the puncture and tapping, and prefers to make an incision about six centimetres long; then empties the abdomen of the fluid, inserts the finger, and finds out what is the local cause. One is then at once able to decide for or against an immediate or a future operation. If a radical operation is not to be done, we have at any rate drawn off all The cases are divided into groups. the fluid. To the first group belong cases of "general" ascites, as a consequence of so-called "tuberculous" peritonitis. This form appears mostly in young people. No lesion in the heart, kidneys, or liver is demonstrable, and no signs of tuberculosis are anywhere found. On laparotomy, one finds numerous nodules of a gray, reddish color both on the visceral and parietal surface of the peritoneum. Some of these cases. as it seems to us, are not cases of tuberculous peritonitis, in the modern acceptation of the term. We would prefer to call them cases of "peritonitis nodosa." The first case given was observed by him twenty years ago, before the tubercle bacillus was discovered. The patient was quite young,—twenty years of age; no signs of phthisis. There was a high grade of ascites. Patient had been tapped several times. Laparotomy performed, the fluid evacuated, and the before-mentioned nodules were found. Seeing the nodules, he made a diagnosis of tuberculosis, and gave a bad prognosis, and the patient-got well. In the second case laparotomy was performed, the fluid was evacuated, and one of the nodules cut out. central portion of the nodule was caseous, but no giant-cells were found. (Tubercle bacilli had not been discovered, and were not looked for.) The patient recovered. The third case, which was operated upon in 1892, was somewhat similar. The microscopical examination showed small-celled proliferation, with a rich blood-supply. No giant-cells; no tubercle bacilli. In any of these three cases tapping would have been of no avail, for it would not have been possible to make a diagnosis by palpation, except by exclusion after the fluid was drawn off, and the diagnosis could only be established by opening the abdomen and cutting out one of the nodules for examination.

The second group consists of cases where the ascites was due to papilloma of the ovaries.

Papilloma of the ovary, or superficial papilloma of the ovary, consists of an abundant growth of connective tissue villi, which comes from the surface of the ovary, while the ovarian stroma itself is either found to be thickened or is nearly normal. These cases are not always distinguished from those rare cases in which a papilloma has burst, and a part of it has grown free in the abdominal cavity. The characteristics of superficial papilloma of the ovary are,— 1, both ovaries are generally involved; 2, they cause a high grade of ascites, which is liable to return again after tapping; 3, they are generally too small to be palpated, even after tap-The first observation of this kind was published by Gusserow and Eberth in Virchow's Archiv, No. 43, 1868. Patient, thirty-four years of age, had a high grade of ascites for a year and a quarter. Had been tapped several times (in Billroth's clinic among others). reason for ascites discovered. Umbilical hernia developed and burst, and the patient increased the opening herself and let off the Finally the hernia became very large. A convolution of intestine had come out through the hernia, and when the patient was seen most of the small intestine lay outside the abdomen and showed signs of discoloration. Operation for hernia. Rupture of gangrenous portion of intestine. Death. Post-mortem showed papilloma of the ovary. (He also adds other cases.) These cases of rare disease of the ovary ought to convince us that where we have ascites from some unknown cause in the abdomen, we ought not to limit ourselves to puncture; in fact, we ought not to puncture at all. In none of them was it possible to diagnosticate the nature of the cause till the abdomen had been opened. In one of them, where puncture had been made before, and bloody serous fluid evacuated, we might have been led to think of carcinoma of the peritoneum, and been unwilling to operate. admixture of blood, as a matter of fact, was the result of the puncture. In two of the cases death unfortunately followed the operation, but this must be attributed to the exhaustion of the patient by the frequent tappings. In another case death was caused by septic peritonitis. Otherwise we feel sure that the patient would have been cured, since we have no instance of recurrent papilloma of the ovary where it has once been thoroughly excised.

To the third group belong those far more common cases of ascites due to carcinoma of the ovaries and the peritoneum. Here it might be asked, "Is not incision unnecessary? Here we can feel even a nodular tumor after puncture. Is it not sufficient to puncture in order to make the diagnosis." However, again we should employ incision. First, because we can never be otherwise sure that the growth is cancerous; secondly, because only by this means can we decide whether (if there is carcinoma) the ovary or uterus ought to be removed, as it is the rule to extirpate cancerous ovaries unless the peritoneum is involved, and every carcinoma must be removed, if it is in healthy tissue. If there is carcinoma of the ovaries, then by incision we can tell whether or not the peritoneum is affected, and that can only be discovered by laparotomy. It will be objected that in malignant disease laparotomy has sometimes hastened death. This by no means always occurs, and against it we can put, first, the certainty of diagnosis; secondly, if the tumor is benign, a timely operation and recovery; and to these we may add, that where the tumor is malignant, a laparotomy sometimes hinders its progress, and, even without further operation, life is prolonged. These cases fall naturally into three subdivisions. First, those in which the malignant growth could be removed (with ovaries). It must be remembered that we are not talking now of operations for malignant growths in the abdomen in general, but only of those in which general ascites was the characteristic symptom. Out of three cases, two recovered completely; the third died later of multiple sarcomata.

In the second subdivision come those cases in which the malignant growths could not be entirely removed. The first case has the following history:

M. G., aged twenty; admitted August 18, 1891; primipara. Three months before entrance she had a great deal of pain in the abdomen, which obliged her to stay in bed; was in bed four weeks. Before entrance she noticed a swelling, with no pain, but shortness of breath. The abdomen measured 110 centimetres; general ascites. No tumor felt by palpation or by vaginal examination. Laparotomy August 19; four to six litres of ascitic fluid removed. Tumor size of fist on right side of uterus, in layers of broad ligament; mass adherent. Removed with difficulty, because the tumor

was of a friable, medullary material. A great deal of hemorrhage followed. Left ovary healthy.

Diagnosis. — Spindle- and round-cell sarcoma. Patient recovered from the operation, but died of peritonitis without ascites, and of marasmus, after seven months.

Autopsy.—General sarcoma of peritoneum, omentum, retro-peritoneal lymph-glands, retrosternal glands.

The next case was one of carcinoma not connected with the genital apparatus, but adherent to the intestines; removed. Patient left hospital completely well. She was lost sight of.

Of the five cases in this category, in all of which a portion of the growth was left in the abdomen, three died, not in consequence of the operation, but on account of the rapid development of the malignant growths. Two got well (one a woman of seventy-five). What became of these cases ultimately is not known; any way, their lives were prolonged by laparotomy.

To the last subdivision belong those cases of ascites where no attempt was made to remove the tumor, but where the abdominal section was made for the sole purpose of evacuating the fluid. Of five cases, two died and three got better for the time being. These cases show that drawing off the fluid by laparotomy is often a better method of proceedure; a diagnosis can be made, and we know with absolute certainty whether an operation is indicated or not.

Lastly, we must mention cases of general ascites caused by benign disease of the genital apparatus. The first case was a woman, aged fifty-seven; nine children; came into clinic August 4, 1890; menopause one year ago; since that time had remarked a swelling in the abdomen, which caused her no particular inconvenience. For the last three weeks rapid increase in swelling, causing a feeling of tension, pain in abdomen and back, with pain on micturition, and prolapsus vaginæ. Abdomen 103 centimetres (from ascites). No tumor felt in abdomen; nothing discovered in the other organs. Laparotomy August 6, 1890. Color of fluid yellow; hard tumor fastened to left cornu of uterus, easily separated from it; right kidney a little out of place. The uterus was attached to abdominal wound. Tumor proved to be fibroma ovarii sinistri; recovery; vagina replaced. Even operation did not show the reason for so much ascites.

By tapping, of course, we could not have discovered the real nature of the tumor causing the disease. We might, indeed, have felt the tumor, but could not have told about its malignant or non-malignant character. In another case belonging to this category we could not have had any idea of the nature of the disease by tapping. By laparotomy we were able to see plain indications for removal of the tumor, and were consequently able to cure the patient.

Professor Gusserow, in this article, expresses, we think, the views of most of us who have had much experience in abdominal surgery. With our present technique, even were the advantages to be gained by such a procedure far less than they really are, we need not hesitate to open the abdomen instead of making a puncture.

When the general practitioner meets with a case of ascites where all implication of the circulatory apparatus—the liver and kidney—has once for all been definitely excluded, it would certainly be well for him to call in the specialist before adopting the "puncture" method. Our own experience fully bears out the futility of attempting to arrive at a certain diagnosis in every case by examination (chemical and microscopical) of the fluid which has been aspirated. The only certain way is to use the hand or the eye, or, if possible, both. Again. we have seen more than one case which has come to autopsy, where the patient had died after numerous aspirations, and where the condition of things had led us to believe that a timely operation might have at least much prolonged the patient's life, even if the disease could not have been thoroughly eradicated. In these cases it seemed that valuable opportunities had been lost; and since an abdominal section not only gives the patient the best chance for complete recovery, but, when employed as a palliative measure, is more efficient than frequent tappings, it is in almost every case the better method. With respect to the "peritonitis nodosa," of which Gusserow speaks, it does not seem clear to us that these were not instances of peritoneal tuberculosis, and if this were the case, the success which attended the operations, and which we have seen confirmed in our work, would only go still further in proving his proposition. Finally, in these days, when in both medicine and surgery we are all striving as much as possible to avoid working in the dark, and wish to treat our patients for the disease they really have, and not for a hundred and one others which they might possibly be suffering from, the advantages of an absolute diagnosis can hardly be overrated.

## MALAYAN FISH-POISON, OR AKER TUBA, SOMETIMES CALLED DERRIS ELLIPTICA.

Aker tuba is the root of a woody climber, largely used among the Chinese for killing insects, and in some portions of the world for killing fish. From this root a milky sap exudes, which, after drying, is mixed with clay and ground into a fine powder with pieces of refuse, shrimps or small fish. This mass is then made into small balls, which are thrown into the sea.

Soon after they are devoured by fishes the fish rise to the top of the water, where they are caught by the watching fishermen.

In the *Pharmaceutical Journal and Transactions*, Leonard Wray gives an account of the way in which this poison is used and of the results of his experiments.

It would be interesting if some of the drug could be obtained for physiological experiment upon the higher animals.

One or more dugout canoes, according to the size of the stream to be operated on, are partly filled with water and the pounded roots. The men then upset the boat or boats into the river, and allow them to drift down with the current, while with nets and spears they secure the fish as they rise stupefied to the surface. It is a most destructive method of fishing, killing, as it does, all the fish, little and big, for some miles along the water-way. The young fish succumb much more readily to the poison than the larger ones. In ponds and pools the destruction of the fish is even more complete than in a river, and the Malays say it is years before they become tenanted with fish again. In all instances, besides the actual effects of the poison, the fouling of the water by the decomposition of the bodies of the fish and animals of all sorts has to be taken into consideration.

By experiment, Dr. Wray finds that twenty grains of the green root will render one gallon of water sufficiently poisonous to kill fish. The first effects of the poison on a fish are to cause it to make violent efforts to escape, jumping out of the water, rapidly swimming about, etc. Then the breathing becomes labored, and there is a sluggishness and uncertainty of movement. The next symptom is an increasing inability to maintain the ordinary position; then the fish turns on its back, rises to the surface, and the breathing becomes slower, and finally ceases. When fish have reached the stage of turning on their backs and rising to the surface, they will, if put into fresh water, slowly revive, and, after the lapse of some hours, appear little, if any, the worse for the experiment. Mr. Wray

has three times poisoned a fish, allowing intervals for it to revive, and it has lived in an aquarium for days, or even weeks, afterwards.

The poisonous principle is not, as might be expected, an alkaloid. The author tried the usual methods for separating these substances, but the residues from the exhaustion of both acid and alkaline aqueous solutions by ether and chloroform did not possess toxic effects. After many experiments he found that the poisonous principle, for which Wray proposes the name "tubain," is a very brittle, reddishbrown colored, resinous substance, quite insoluble in water, paraffin oil, and benzine, but soluble in alcohol, ether, and cbloroform. has a specific gravity of 1.1662; is dissolved by nitric acid, forming a bright dragon's-blood red solution with carbonate of sodium. When heated in a glass tube it melts, boils, and then carbonizes, a brown-colored oil condensing on the cool part of the tube. It burns with a large smoky flame, leaving a quantity of carbonaceous ash. Fractional distillation and other means would perhaps break up the resin into several distinct substances, only one of which may be the virulent body; but very limited laboratory appliances prevented his carrying on the investigation further than has been done.

Tubain is most conveniently prepared by crushing the chopped root and digesting it, with little heat, for some hours in alcohol acidulated with hydrochloric acid, filtering and evaporating on a water-bath at a low temperature until a gummy substance separates. When all the spirit has evaporated and water only remains, the tubain may be removed and pressed into a mass. This can then be washed by kneading in hot water, and further purified by resolution in alcohol and repeating the above The result will be the resinous substance above described. The roots should be digested a second time in fresh alcohol. The dried root yields 9.42 per cent. of tubain by the above process. When tubain is dissolved in spirits of wine and left to stand, a granular deposit of a dirty-white color is formed, which is only sparingly soluble in cold alcohol, but is dissolved by hot alcohol, chloroform, and ether. This granular body redeposits on evaporation from ether as a pure white, crystalline, tasteless From its solution in chloroform it is left as a clear white varnish. When heated it melts into a transparent white fluid, which, on an increase of heat, turns brownish red and partly distils, unaltered. This substance, when freed from all traces of tubain, is not poisonous to The acid aqueous solution left after the decomposition of the tubain, and which contains presumably any alkaloids present in the roots, is also not poisonous.

One part of tubain in 350,000 parts of water proves quickly fatal to fish, and water containing the extraordinarily small quantity of one millionth—i.e., 1 grain in 143 pounds of water -will kill fish in from one-quarter to half an hour, according to species. There is a considerable difference in the susceptibility of various kinds of fish to the effects of the poison, and the siluridæ, or catfishes, appear to be the most tolerant of any. It has been stated that fish killed by aker tuba are sometimes unwholesome, but when we see the extremely small amount of poison which is required to produce a fatal result, it seems improbable that any ill effects can be produced by eating fish so killed: the more so as tubain distils over with the steam from boiling water, and would be, in part at least, eliminated in cooking. The crushed roots, when boiled with water in a retort, yield an opalescent distillate, smelling strongly of the root and actively poisonous. The Malays say that fish killed by means of aker tuba very quickly go bad; but, unless the poison acts as a chemical ferment, which seems unlikely (as tubain added to milk causes no change, and, if anything, rather retards its turning sour), it is more probable that the idea arises from comparing fish caught alive and remaining so in the bottom of the boat for some hours, perhaps. before they actually die, with those killed by the root at the time they are taken out of the water. In the case of fish, the poison is evidently absorbed by the gills, and passes at once into the circulation of the blood, which probably accounts for the infinitesimal doses which are enough to produce lethal results, for with most poisons this is by far the most effective way of administering them. Owing to the insolubility of tubain, it may be eaten by a fish with impunity. I have seen a fish eat enough to kill a score without any ill effects; but when a solution of it in spirits of wine is added to water, although the tubain is at once precipitated as a bluish-white cloud, still it is then active. Presumably, the fine state of subdivision enables it to be assimilated by an animal organism. In the sap of the plant it exists as an emulsion; and the sap, having no tendency to coagulate, may be diluted to any extent with water. By this means it becomes an extremely attenuated emulsion. When the roots have become dry, this only takes place to a very limited extent, and a solvent is then necessary to bring the tubain into a form in which its poisonous qualities can be applied.

There appears to be no reason why we should not take the hint from the Chinese market gardeners, and apply the poison to the destruction of the many insect pests to which garden and greenhouse plants are subject.

From what has been said as to the nature of the substance, it will be apparent that the dried roots would be of little or no use for the purpose, and the tubain must, after being extracted from the root, be converted either into an emulsion or into some chemical combination easily dissolved in water. By the aid of a small quantity of spirit it may easily be emulsified with soap, which, on solution in water, presents the poison in an active form. He thinks it may also be saponified if mixed with oil before it is treated with alkali. His attempts in this direction have been only partially successful as yet. In both cases potash or soft soaps would be the most convenient vehicles with which to combine it, as they are so much more readily miscible in water than the soda soaps. The extraction of the poison from the roots in a large way would not be costly, as by suitable apparatus the spirit could be distilled off and used over and over again; and, doubtless, some cheaper method of extraction could be found. The plant grows readily in the Straits settlements. The roots are dug up from time to time, and the stumps and suckers are replanted, and soon throw out new roots. The stems also contain the poison, though in not so great a proportion, but still worth extraction. It is probable that the best time of year to harvest the root would be in January, as the plant is then at rest and nearly leafless. This is a subject which seems to be well worth the attention of the makers of insecticides, and of floriculturists and horticulturists generally.

# TREATMENTS OF DUJARDIN-BEAUMETZ.

The following plans of treatment are recommended by Professor Dujardin-Beaumetz in the Hôpital Cochin (Les Nouveaux Remèdes, August 24, 1892):

## a. FOR A MODERATE DIABETES.

- 1. Before breakfast and before dinner, about .34 gramme of carbonate of lithium and 2 drops of Fowler's solution are to be taken in a glassful of Vichy or Vals water.
- 2. If the polyuria is marked, after each meal r gramme of antipyrin is to be ordered in a little black coffee.
- 3. Every morning the body should be sponged with warm water and cologne; after the bath,

- a brisk dry rubbing with a suitable horse-hair
- 4. The mouth should be rinsed out in the morning, and after breakfast and dinner, with the following mixture:

Boric acid, 25 grammes; Phenic acid, 1 gramme; Thymol, .25 gramme; Water, 1 litre.

#### To which should be added:

Tincture of anise seed, 10 grammes; Essence of peppermint, 10 drops; Alcohol at 90°, 200 grammes; Tincture of cochineal, q.s. to give the mixture color.

The portion to be used of this solution should be mixed with an equal amount of water. •

- 5. The following regimen should be rigorously adopted: An exclusive diet of eggs, all kinds of meat, game, mollusks, fish, and cheese. All green vegetables, such as carrots, turnips, and beets, may be allowed. Fatty articles of food must be insisted upon, such as sardines, Spanish mackerel, and herring, all those fish prepared in oil; lard, butter, goose-fat, liverfat, ham-fat, pork, sour-krout, etc. such as plain bouillon, cabbage soup, bouillon with poached eggs, onion soup. All these soups should be taken without bread. Bread, such as gluten bread, or bread without crust, or soja hispida bread, or else 100 grammes of white potatoes cooked in water. To sweeten drinks, saccharine should be used. Tea, maté, coffee, and kola are very good. All feculent material is to be avoided, such as pastes, bread. pies, pastry, cake, macaroni, sugar or sugary dishes, chocolate, confectionery articles, fruits, milk, brown sauce, farina. For drinking purposes, especially after meals, old red wine, Bourgogne or Bourdeaux, mixed with Vichy or Vals water; a little amount of pure wine, but no brandy or any other liquors.
- 6. All bodily exercise is favorable, but it should not be carried so far as to produce fatigue. Walking in the open air, mountain excursions, gymnastics, fencing, gardening, carpentering, all are good. Massage is equally serviceable.

### b. TREATMENT OF OBESITY.\*

- 1. Every morning a sponge-bath with warm water and cologne, followed by a brisk dry rubbing and massage.
- , \* This treatment is to be established only after a careful examination into the condition of the heart and circulation.

- 2. Take every morning a glass of Rubinat, Carahana, or Villacabras water.
- 3. At the end of each meal take a dessert-spoonful of the following solution:
  - R Iodide of potassium, 15 grammes; Distilled water, 250 grammes.
- 4. Follow rigorously this diet: First meal, a slight breakfast at eight o'clock; a cup of chocolate and 20 grammes of bread. Second meal, lunch at noon; 2 eggs or 100 grammes of meat, 100 grammes of green vegetables, salad, 15 grammes of cheese, any amount of fruit, 50 grammes of bread, and a glass and a half of liquid (light white wine mixed with Vichy water). Third meal, dinner at seven o'clock; no soup, 100 grammes of meat, 100 grammes of green vegetables, salad, 15 grammes of cheese, any amount of fruit, 50 grammes of bread, a glass and a half of liquid (white wine with Vichy water); abstinence from all drink between the meals; suppression of coffee, tea, brandy, and other liquors; exercise out-doors.
- c. TREATMENT OF DILATATION OF THE STOMACH.
- 1. Take before each meal from 1 to 3 cachets, to be prepared as follows:
  - R Salol,
     Salicylate of bismuth,
     Bicarbonate of sodium, of each, 10 grammes.
     M. and divide in 30 cachets.

The following prescription is also of advantage:

- Benzonaphthol,
   Salicylate of bismuth,
   Hydrate of magnesium, of each, 10 grammes.
   M. and divide in 30 cachets.
- 2. If constipation is present, take at night, in a half-glassful of water, a dessertspoonful of the following combination:
  - R. Pulverized senna leaflets, Washed sublimed sulphur, of each, 6 grammes; Powdered fennel, Powdered anise seed, of each, 3 grammes; Pulverized cream of tartar, 2 grammes; Liquorice powder, 8 grammes; Powdered sugar, 25 grammes. M.
- 3. Every morning a sponge-bath with warm water and cologne, to be followed by a brisk dry rubbing.
- 4. Observe the following regimen of diet: Seven-hour interval between breakfast and dinner; do not eat between meals. All articles of food are allowed except game, fish, mollusks, and cheese. The following must particularly

be insisted upon: a. Meats must be well done, well roasted over an open fire (chicken, beef, mutton, tongue, fresh pork). b. Feculent articles must be in a pure state (potatoes, red beans, lentils, peas), and so must other substances, such as macaroni, cake, etc. c. The green vegetables (carrots, turnips, beans, peas, etc.) must also be well cooked. d. Fruits should likewise be cooked. Bread, in the form of toast. No liquid soups. For drinking purposes, take at every meal 300 grammes of light white wine well diluted with water. No pure wine, nor any amount of liquors. Never take anything between meals.

# THE TRANSFUSION OF NERVE-SUB-STANCE IN THE TREATMENT OF THE INSANE.

In an able article, A. CULLERRE (Gazette Médicale de Paris, August 27, 1892) discusses the above subject, formulating the following conclusions: 1. The transfusion of nerve-substance (I employ the method of Arsonval to sterilize the liquid) is well borne by deranged persons, as well as by tuberculous subjects, exercising an almost immediate stimulating action on the nutritive functions. 2. The first sign of this stimulation is an increase of the appetite to such an extent that some patients appear unable to satiate their hunger. This action may be of importance in the treatment of mental weakness, to combat, in certain cases, sitiophobia, and I have seen it do good in many patients who systematically refused nourishment. 3. The reconstituent effects are rapid, muscular debility disappears, corpulence is developed, and all the organic functions become regular. 4. The psychopathic state, in curable cases, has been often ameliorated for hours after the injection, but a permanent improvement has not been obtained. All in all, I do not consider this conclusion as a definite one, since the majority of the cases treated have not exhibited a favorable prognosis from the beginning. It is the general rule, however, that, together with the improvement of nutrition, there occurs a similar modification in the mental state.

## THE APPLICATION OF RAPID AND CON-TINUOUS VIBRATIONS IN THE TREATMENT OF NERVOUS DISORDERS.

CHARCOT (Le Progrès Médical, August 27, 1892) has called attention to the good effects produced by the application of rapid and continuous vibrations in the treatment of

nervous disorders. By means of an apparatus provided with an electro-motor mechanism, rapid oscillatory movements are produced, similar to those caused by a wagon in motion. This novel application has done good service in certain forms of neuralgia, migraines, insomnia, and neurasthenia. A recent apparatus, in the shape of a casque or helmet, has been constructed by Larat and Gautier, assisted by Gaiffe. It is simple in construction, easily managed, and portable. The small motor makes about six thousand revolutions in a minute, quite regular, producing a continuous vibration, which is transmitted to the cranium through the internal plates of the casque. The application is well borne by a healthy subject. A séance of ten minutes, given at six o'clock in the evening, is sufficient to produce a calm sleep, lasting the whole night. Eight or ten séances are sufficient to cure a case of insomnia, provided this is not due to organic disease of the brain. Boudet has seen relief produced in three cases of migraine by the vibratory treatment, and of three neurasthenic patients, two were cured and one, in whom the application was interrupted, was ameliorated. Charcot believes that, on the whole, vibration thus applied is a powerful sedative to the nervous system. The vibratory movements act particularly through the encephalic mass, and, in support of this, the writer mentions a case in which the predominant spinal symptoms, such as weakness of the lower extremities, sexual impotence, all disappeared, without a tendency to recur, after the application of the vibratory move-In this case static electricity had done ments. Specialists have for a long time no good. employed, in the treatment of certain forms of mental disease, transcerebral currents. It is well known that rapid vibrations propagated to the encephalon bring about good results. The author refers to another case,—melancholia, accompanied with marked depression, -in which quite favorable results were obtained. In this instance, the vibratory treatment seemed to arrest the march of the disease, which, before the treatment, exhibited no sign of retrogression.

# THE TREATMENT OF EPILEPSY BY EXCITO-MOTOR MEDICAMENTS.

Apropos of the recent experiments of Pasteur, in regard to the treatment of epilepsy with the attenuated virus of rabies, and of a communication to the Société de Biologie by Féré on the action of picrotoxine in epileptic subjects, Pierret has read before the Société des Sciences Médicales de Lyon (Lyon Médical, August 28,

1892) a preliminary note on the treatment of the malady in question by the excito-motor medicinal agents, like picrotoxine, belladonna, and strychnine. The author condemns the use of these medicaments in the disorder under consideration, and promises to discuss the subject extensively at an early date.

#### KOUMISS.

Papers upon this subject have from time to time appeared in the journal, but it is curious to note how careful most of the authors have been to evade giving detailed particulars regarding the difficulties that have to be surmounted in the manufacture of aerated milk preparations.

The original koumiss is the Russian, made from mare's milk, which is used for the obvious reason that it is less rich in casein and fatty matter than cow's milk, and therefore far more easy of digestion.

Mare's milk contains approximately 1.70 per cent. of casein and 1.40 per cent. of fatty matter, whereas cow's milk contains 4.55 of casein and 3.70 of fatty matter.

Cow's milk is probably universally used in England, and it answers the purpose admirably in most instances, but a better preparation is obtained by diluting with water to reduce the percentage of casein, etc.

Mare's milk contains 8.75 of milk-sugar, cow's milk only 5.35; it is, therefore, necessary to add some of this to our preparation. The following formula answers very well. Take of—

Fresh milk, 3xii; Water, 3iv; Brown sugar, 3iiss; Compressed yeast, gr. xxiv; Milk-sugar, 3iii.

Dissolve the milk-sugar in the water, add to the milk, rub the yeast and brown sugar down in a mortar with a little of the mixture, then strain into the other portion. Strong bottles are very essential, champagne bottles being frequently used, and the corks should fit very tightly; in fact, it is almost necessary to use a bottle machine for the purpose, and once the cork is properly fixed it should be wired down. Many failures have resulted because the corks did not fit properly, the result being that the carbonic acid gas escaped as formed and left a worthless preparation. It is further necessary to keep the preparation at a moderate temperature, and, to insure the article being properly finished, the bottles are to be gently shaken each day for about ten minutes to prevent the clotting of the

casein. It is as well to take the precaution of rolling a cloth round the bottle during the shaking process, as the amount of gas generated is great, and should the bottle be of thin glass or contain a flaw, it may give way. Some few days elapse before the fermentation passes into the acid stage, and when this has taken place the preparation is much thicker. It is now in the proper condition for allaying sickness, being retained by the stomach when almost everything else is rejected.

Malted koumiss can be made as follows:

Extract of malt, 3iss; Compressed yeast, gr. xx; Brown sugar, gr. x; Milk, to champagne pint.

Euonymized koumiss is a suitable preparation for use in some cases of derangement of the liver in which food is rejected and an hepatic stimulant is required, combined with a slight sedative, 3 drachms to every 16 ounces of the diluted milk; then proceed as with ordinary koumiss.

Coca koumiss could be made by the addition of cocaine hydrochlorate to the milk, and would be specially adapted in cancer of the stomach.

Aerated whey, which is a very refreshing drink in cases of fever, and much used in some parts of Germany, could also be manufactured on the same principle as koumiss.

Peptonized koumiss.—The easiest way of getting a satisfactory preparation is by the adoption of the following formula:

> Papaine, gr. vi; Milk, to champagne pint; Compressed yeast, gr. xx; Brown sugar, Ziii.

This does not keep long.

Meat and malt koumiss would constitute a serviceable preparation in consumption.

Chemists dealing in these preparations should impress upon the minds of their customers the necessity of keeping the bottles in a cool place, and the advisability of using either champagne or soda-water taps, so that the bulk of the gas may not escape with the first draught.

SULPHITE OF ZINC AS AN ANTISEPTIC IN TYPHOID AND CHOLERA.

Many years ago DR. CHARLES R. C. TICH-BORNE introduced sulphite of zinc as a salt especially suited for general use as an antiseptic. At that time the cost of producing this salt was against its being used as a commercial sanitary agent. The manufacture of the sulphites has, however, assumed of late years a commercial aspect; in fact, there is now reason to suppose that sulphite of zinc can be, and is, manufactured at a less cost than any other zinc compound.

A few years ago, Dr. F. Heuston, of the Adelaide Hospital, and Mr. Tichborne, also applied the zinc sulphite to fabrics for antiseptic dressings, as it can be deposited in the fibre of the material in a semi-soluble condition by double decomposition. It therefore specially lends itself to such an application. In this form it has been extensively used in hospitals, and experience shows that not only does it possess the combined antiseptic properties of a zinc salt, such as the chloride, but also the special antiseptic action of the sulphites, and yet with all we have the healing properties of oxide of zinc.

The zinc sulphite is a very insoluble salt, being soluble to the extent of 150 grains per gallon only, at ordinary temperatures, but this amount is sufficient to keep up a permanent germicide condition in any supernatant fluid, chiefly due to the fact that the sulphite is always absorbing the available oxygen and passing into the more soluble sulphate.

Some time ago Mr. Tichborne conducted experiments with excreta of typhoid patients, and as these experiments required some considerable caution, made use of sulphite of zinc for the purpose of controlling the development of typhoid germs. The permanent character of this control was striking. If we consider for a moment we shall perceive that this partial insolubility of the antiseptic is of special value when disposing of the excreta of typhoid and cholera patients. Sewage of this nature always contains a certain amount of insoluble matter, which of a necessity carries down with it, by virtue of the attraction of mass, the infinitesimally small, but yet solid, germs. The retarding influence of any soluble disinfectant must, therefore, be of a more or less temporary nature, because in a flow or stream of water, such as would be found in a sewer, there must always be a tendency for the disinfectant to be washed away from the more solid portions with which the germs are chiefly associated. But in the use of an antiseptic such as sulphite of zinc, the supernatant liquid is permanently antiseptic, while the more dangerous septic deposits are still subject to retarding influence. Specimens were exhibited which showed this action in a marked manner. They were procured by inoculating sterilized gelatin with typhoid excreta, some with and some without zinc sulphite. When placed side

by side in the incubator, the results were strikingly different.

Attention is directed to the manner in which the germs have been volatilized, so to speak, in the tubes in which they have been formed. The germs have not only been carried to the under surface of the cotton-wool plugs with which the tubes are closed, but have even penetrated to a slight extent the loose under surface of the wool. The carriage of these germs can hardly be explained by the "raft" theory of Professor Tyndall, because in these sterilized tubes we have no atmospheric dust to act as rafts. The germs are probably carried by the clouds of volatile liquids, just as we see on a much larger scale rain-clouds able to carry the comparatively large and coarse particles of soot.

## THE RESULTS OBTAINED FROM THE USE OF BROWN SEQUARD'S METHOD IN GREECE.

P. S. PAMPOUKIS (Revue Méd. de l'Armée, July, 1892; Revue Internationale de Bibliographie Médicale, September 25, 1892), of the Bacteriological Laboratory at the Medical School of Athens, has been the first physician in Greece to employ the method of Brown-Séquard. Pampoukis used a substance prepared by himself from the testicular juice of rabbits and cocks, guinea-pigs being quite rare in Greece. The author first reported to the Medical Society of Athens the case of an old man, suffering from neurasthenia, in which the injections produced satisfactory results. This led the writer to try the method in other diseases. During the month of June last he made over 600 injections in the treatment of different disorders, comprising 6 of neurasthenia, 11 of spermatorrhœa, 3 of impotence, 4 of insomnia, 2 of frequent urinary emissions (due to a neurosis of the bladder), 2 of cardiac palpitation (without organic lesion), 2 of paraplegia, 1 of agarophobia, and 1 of locomotor ataxia. Of all the patients, those suffering from spermatorrhœa, insomnia, palpitations, and neurosis of the bladder were completely cured. Of the neurasthenic cases, only 3 were cured, 1 was slightly improved, and in the other 2 only negative results were observed. In a later contribution (Le Galien, July 24, 1892) the author states that while in some persons, especially those suffering from spermatorrhœa, the lymph produced a cure by a stimulating action upon the cord, in others not affected with such a disease it caused orgasms. In concluding his valuable study, the author states that the substance prepared by himself has never produced erythematous inflammation or abscesses, and only a slight pain lasting a few hours after the injection.

# THE EMPLOYMENT OF CHLORHYDRATE OF HYOSCINE IN THE INSANE.

In a recent thesis, LODDE (Paris, 1891; Revue Internationale de Bibliographie Médicale, September 25, 1892) discusses the therapeutic action of this important alkaloid in the treatment of the insane. The drug, in the form of the chlorhydrate, according to the author, is useful in the treatment of acute and subacute maniacal states, in delirium tremens, in the delirium of hallucination, in general paralysis associated with maniacal excitability, and in the pre- and post-exciting periods of epileptic crisis. The medicament may be employed with advantage in agitations of traumatic origin, and, indeed, in all those cases in which a maniacal condition is to be calmed down. Hyoscine is not to be considered as a curative agent for mania; and, on the contrary, certain states, such as cardiopathies and the cachectic conditions, may be looked upon as contraindications for the use of the drug in question. Hyoscine may be employed hypodermically, this being an advantage, especially in maniacal cases. The dose of the medicament may vary from 1/2 to 1 milligramme, and even, in rare cases, to 2 milligrammes. The chief physiological effects of hyoscine on normal individuals are mydriasis, a certain amount of muscular relaxation, slowing of the circulation, suppression or diminution of the salivary secretion, and a tendency to sleep. These effects are produced in from ten to twenty minutes, after a preliminary stage of excitability. These physiological properties explain the prompt and powerful action of the alkaloid in maniacal subjects, in whom it generally produces calm or sleep. This effect lasts from six to ten hours. According to the author, the drug deserves a wider attention, and more extended studies are necessary in order to determine more accurately its full range of action.

# ETHYLATE OF SODIUM AS A DERMAL AGENT.

GAMBERINI and MARONI, of Bologne (Semaine Médicale and Journal de Pharmacie et de Chimie, August 15, 1892; Revue Internationale de Bibliographie Médicale, September 25, 1892), have tried this new combination, and found that it exercises a favorable influence in certain forms of cutaneous disease. A two-per-cent. ointment of the salt, in olive oil,

produced a cure in a case of psoriasis in the course of twenty days. Good results were obtained in a case of Paget's disease, locally applied, in aqueous solution of the strength of ten per cent.; also in the treatment of indolent ulcers of various origin. Curetting, followed by the application of dressing with the latter solution, produced a cure in two cases of erythematous lupus.

## LYSOL IN THE TREATMENT OF BLEN-NORRHAGIA.

V. CARVALLO, of Chili (Boletin de Medicina de Santiago de Chile, June, 1892; Revue Internationale de Bibliographie Médicale, September 25, 1892), recommends the use of lysol in the treatment of blennorrhagia, having obtained satisfactory results from the use of the drug. author has tried the medicament in acute cases, as well as in those of three or four months' standing. He has exclusively employed it in injections, the drug producing a sensation of burning, lasting but a short time. The pain disappeared on the second or third day of the treatment. The secretion diminished after the first injections, and generally disappeared at the end of the week. The author recommends the following formulæ:

- R Solution of lysol (one per cent.), 100 grammes;
   Sydenham's laudanum, 3 grammes. M.
- R Solution of lysol (one per cent.), 100 grammes;
   Chlorhydrate of cocaine, .50 gramme. M.

Either injection is allowed to remain in the urethra for about four or five minutes. The number of injections may be put at three per day, at the beginning, these being gradually increased in frequency according to the requirements of the case.

# PICROTOXINE AND CORIAMYRTINE IN THE TREATMENT OF COLLAPSE.

It is well known that collapse is the result of cardiac and respiratory troubles, these more generally following disturbances of the centres of circulation and respiration. Koeppen (Arch. für Exp. Patholog. und Pharm., xxix. p. 327, 1892; Revue Internationale de Bibliographie Mèdicale, September 25, 1892) has, by means of narcotic agents, produced symptoms analogous to those of collapse, and, under such circumstances, he has studied the action of picrotoxine and coriamyrtine. For instance, frogs and rabbits were narcotized and paralyzed by chloral, urethane, and paraldehyde; picro-

toxine, administered hypodermically, produced no notable change either on the sleep or the paralysis. In rabbits, after having produced a fall of the arterial pressure and a slowing of the respiration by an intravenous injection of chloral, a rise of the pressure and an acceleration of the respiration were caused by picrotoxine administered intravenously also. Similarly, picrotoxine lessens the fall of pressure produced during chloroform narcosis; and the same result is effected during narcosis by urethane, paraldehyde, or amylene hydrate. In these latter instances, however, the action of picrotoxine is less marked, owing to the fact that the effect on pressure produced by the narcotics mentioned is also less pronounced. In the majority of cases, picrotoxine is able to stimulate both the respiratory and circulatory centres, and may, therefore, prove to be an efficacious remedy in the treatment of collapse. Coriamyrtine possesses the same properties, and perhaps in a more decided degree. Given in minute quantities to chloralized animals, it produced acceleration of the respiration and caused a rise of the arterial pressure. The author concludes that, similarly, coriamyrtine may exercise a decidedly favorable action on the centres of both the respiration and the circulation, arousing the activity of these when enfeebled by pathological causes, as in cases of collapse.

# ON A NEW COMBINATION AGAINST TAPE-WORM.

DUHOURCAU (Les Nouveaux Remèdes, October 8, 1892) recommends a mixture of the green extract of male fern, chloroform, and castor oil against tape-worm. It may be given in capsules, and the maximum dose of the extract of male fern may be put down as 1.20 grammes, this, and even a lesser quantity, being sufficient to cause the expulsion of the entire worm.

# THE PHYSIOLOGICAL AND THERAPEUTIC ACTION OF TESTICULAR JUICE.

RUBENS HIRSCHBERG (Bulletin Général de Thérapeutique, October 15, 1892) has made a careful study of the physiological and therapeutic effects of testicular extract. His observations were made on two cases of locomotor ataxia and two of cerebral neurasthenia. The juice was obtained from Brown-Séquard's laboratory, through D'Arsonval. The injections were made hypodermically and under the best antiseptic precautions. The usual dose at each injection was two cubic centimetres. The

remedy employed was given in two portions. The first portion was administered to three patients; of these, one suffered from feverish reaction and an exaggeration of the local phenomena. The other portion of the liquid was given to three of the patients, in all of whom it produced fever. In the fourth case the juice did not cause a feverish reaction, and only an aggravated condition of the local manifestations. The symptoms produced by the injections are, then, according to the author, local and general, the first causing an aggravation of the local phenomena, as happened in the two ataxic patients, in both of whom the remedy The author beproduced untoward effects. lieves that the testicular juice causes these phenomena through a congestion of the spinal cord. In advanced cases of locomotor ataxia the posterior columns of the cord are in a feeble state, and cannot, therefore, tolerate an increased amount of blood. The writer further contends from this that the administration of the juice in such cases, even if the remedy does not produce a feverish reaction, is fraught with evil, owing to the provoked local hyperæmia. In this respect the action of the juice may properly be likened to that of strychnine on the central nervous system. The juice, in fact, no matter what precautions may be taken in regard to its preparation and administration, may contain in solution, according to Hirschberg, the substance capable of producing in man a septic fever. He therefore suggests the making of a thorough examination of all the organs of the animals used in the preparation of the juice, in order to avoid the transmission through it of pathogenic germs.

# EUCALYPTEOL—A NEW DERIVATIVE OF THE ESSENCE OF EUCALYPTUS.

LAFAGE, of Neuilly (Bulletin Général de Thérapeutique, October 15, 1892), gives his experience in regard to the physiological and therapeutic action of a new derivative of eucalyptus, prepared by Anthoine. This substance is obtained by the action of hydrochloric acid on the essence of eucalyptus, and has received the name of eucalypteol. It is a hydrochlorate, and occurs in lamellar crystals, having an aromatic odor resembling that of camphor, and a peculiar taste. It is soluble in ether, chloroform, alcohol, petroleum, and in the fatty and volatile oils, but is insoluble in water. It melts at 50° C. and decomposes at 115° C. Administered to rabbits, dogs, and guinea-pigs, in doses of from 1 to 2 grammes hypodermically, or in from 5 to 10 grammes by the stomach, in

the course of twenty-four hours, the new substance produces no untoward symptoms, and, on the contrary, it is well borne. It is especially eliminated by the bronchial and salivary secretions, and partly also by the urine and the intestinal juices. On the secretions and excretions of the intestinal tract the remedy exercises a disinfectant and an antiseptic action. This action has been confirmed by the author by the results . obtained in a preliminary clinical investigation. The drug was found advantageous in acute and chronic bronchitis, exerting a prompt and rapid influence on the mucous membrane. Eucalypteol also acted effectively in certain pulmonary affections, proving that the action of the drug is not limited to the bronchi. Bacteriological examination showed that the remedy likewise possesses antiseptic and disinfectant properties, and its trial in intestinal disorders gave satisfactory results. The author has commenced a series of clinical observations at the Cochin Hospital, the results of which will, undoubtedly, appear at an early date.

# METHÆMOGLOBINURIA INDUCED BY QUININE.

In a note, A. CORRE, of Brest (Bulletin Genéral de Thérapeutique, October 15, 1892), contends that all the salts of quinine are capable. especially when administered in large quantities, of producing a condition of methæmoglobinuria, giving rise, through a renal insufficiency, to an hepatic overwork and a consequent biliary poisoning. It is, therefore, prudent always to prescribe the salts of quinine with great caution. For those predisposed to the action of quinine, the author advises the co-administration of this drug and bicarbonate of sodium. For the consecutive jaundice, if it does appear, it is best to administer oil of turpentine, a remedy that the writer recommends in the treatment of the worst cases of icterus.

# THE ACTION OF CUTANEOUS REVULSION.

François Franck (Revue de Thérapeutique Médico-Chirurgicale, October 15, 1892) contributed to the French Association for the Advancement of Science, at a recent meeting, a note on the local and general effects produced by cutaneous revulsion. From the results of an experimental research, the author appears to have demonstrated that, besides a local congestion, cutaneous revulsion causes a marked elevation of the arterial pressure consequent on a vaso-motor spasm, especially of the abdominal

vessels. Further experiments on the pulmonary and cerebral circulation have shown that the lungs and the brain are protected from congestion by the same mechanism which influences the abdominal viscera, and that, at the same time, antiphlogosis tends to produce in them similar phenomena; that the normal heart is in great part sufficient to do the work imposed upon it under such circumstances. The author believes, finally, that sudden, violent, and painful revulsions (as with the red-hot iron) are contraindicated in those cases laboring under a pathological condition of the blood-vessels, these being endangered by rupture due to an excess of pressure; and, similarly, in cases of heart-disease, such as myocarditis, particularly aortic insufficiency. The pure nervous effects, inhibitory and dynamogenic, are the good effects to be expected in cases of syncope, of pain, and nutritive changes of organic disease.

#### THE ACTION OF GUAIACOL CARBONATE.

In a study of the action of this new combination of guaiacol, J. Brissonnet (Répertoire de Pharmacie, October 10, 1892) argues that in the economy of phthisical subjects it exerts on the toxine products of tuberculosis a modifying and eliminating influence. It is to the toxine products that, in the course of the malady, the fever, the night-sweats, and the disturbances of digestion and the general health are due. If such agents are destroyed, all these symptoms disappear. Guaiacol carbonate acts on tuberculin, the latter substance being modified by losing its sulphur, which enters into combination with the guaiacol. Thus the blood is freed, for a longer or shorter period, from the action of the toxine products. This theory, according to the author, may also be applied to the explanation of the mode of action of other medicinal agents, such as antifebrin, phenacetin, the various alkaloids, etc., which, like guaiacol, enter into combination with the toxines. In this sense, the author considers guaiacol, and particularly the carbonate, an energetic medicament against phthisis, without, of course, excluding the possibility of finding a more heroic remedy.

# THE PHYSIOLOGICAL ACTIONS OF KOLA AND CAFFEINE.

A study of the comparative actions of kola and caffeine, particularly on the muscular system, has been made by EDOUARD HECKEL (Répertoire de Pharmacie, October 10, 1892).

Caffeine in a crystalline form, kola powder, and kola rouge or kolanine, so called by the author, were used in the experiments, using The tracings obtained Mosso's ergograph. were also compared with those previously obtained by Dubois and Marie. The results of Heckel showed that the action of caffeine was of short duration, and the amplitude of the contractions quite limited under its influence. With the powder of kola the duration of the contractions was more prolonged, and the amplitude of these larger and stronger; their diminution was regularly progressive. With the kola rouge or kolanine, the amplitude of the contractions was still better, and their diminution took place more slowly; a suspended scale showed a more lengthened conservation of muscular energy. The author concludes, and in corroboration of the experiments of Dubois and Marie, that the stimulating influence is due to the kolanine or kola rouge, in which the total amount of caffeine mixed in it is in a nascent The difference between the tracing of state. the kola and that of pure caffeine may be attributed to the influence of this latter existing in a nascent state in the former.

# THE EARLY REMOVAL OF PLEURITIC EFFUSIONS.

In the Albany Medical Annals for July, 1892, Dr. Herman C. Gardiner contributes a paper upon this subject. He states that it has been his custom to aspirate very early in all cases of moderately large pleuritic effusion, not waiting for the subsidence of fever or the efforts of nature, or the slow absorbing or eliminating power of drugs. In not a single instance has he regretted acting promptly in these cases. In the twenty cases which have been under his immediate care during the past five years, and treated in the manner above described, all save two have done well. Fourteen of the number required but one aspiration, with, as a result, perfect expansion of the lung, return of the dislocated heart, and no retraction of the chest-Three cases required a second aspiration, which operation removed very much less fluid than at first, with the same result as the above. Three cases required repeated aspirations, one of which made a good recovery; the other two, which were tubercular from the onset (as was proved by finding the bacilli in the sputum), did well as far as the aspiration was concerned, but died later of tuberculosis.

The author treated cases in the ordinary manner with diuretics, absorbents, blisters, iodine, salts method, restriction of fluid, etc., and never noted as rapid result as by early aspiration. Fever, unless very high, which is unusual, unless due to tuberculosis, is no contraindication to an early aspiration. In most instances the fever subsides after the operation. The lung expands perfectly, the viscera regain their normal position, and the patient usually makes a prompt recovery.

## THE COLORATION OF THE URINE OF PATIENTS SUBMITTED TO THE INFLUENCE OF METHYLENE BLUE.

According to the investigations of J. ETIEVANT (Répertoire de Pharmacie, October 10, 1892), the green coloration of the urine produced after the ingestion of methylene blue is not due to a mixture of this substance and the urine, but occurs as the result of a reduction of the methylene blue by the organism on the one hand, and by the urine on the other, the difference of color between the medicament and the urine interfering but slightly in the phenomenon exhibited. The more active the intra-organic reductions the easier is the urine colored; on the contrary, the more intense the oxidation the greater the blue coloration produced. Blue methylene is thus transformed, in the organism. as well as in the urine after the emission of this, into a green leucoderivative or leucobase, the ultimate product of this reduction being the same as the green dimethylphenylene. formulæ of these two bodies differ only in that the two atoms of hydrogen in the green dimethylphenylene are replaced by an atom of sulphur in the methylene blue. Thus:

$$NH < \frac{C_{6}H_{4}N(CH_{3})}{C_{6}H_{4}N(CH_{3})} + H_{4}S + O_{4} =$$

$$NH < \frac{C_{6}H_{4}}{C_{6}H_{3}} = \frac{N(CH_{3})}{N(CH_{3})} + 2H_{4}O.$$

## AN ANTISPASMODIC.

L'Union Médicale for July 12, 1892, gives the following prescription of GILLETTE'S as an antispasmodic:

B. Dover's powder, gr. iv; Cherry laurel-water, 3i; Simple syrup, 3i.

A coffeespoonful of this may be given every hour to children suffering from spasmodic croup. If this does not produce quiet, the patient may receive a rectal injection composed of chloral hydrate, 8 grains; infusion of valerian, 2 ounces; which may be repeated a second time, if very necessary.

If the croup persists and is obstinate, Gillette states that quick relief may be obtained by the use of the following solution, given by means of an atomizer in the mouth:

R. Hydrochlorate of cocaine, gr. iss; Bromide of potassium, gr. xv; Bitter-almond water, Ziss; Distilled water, Zvi.

The bedroom in which the child is ill should have its atmosphere moistened by the setting free of steam, and it is well to apply to the lower extremities and to the chest mild mustard-plasters for counter-irritation. If necessary, the child may be given an emetic to rid it of any mucus which may be occluding the air-passages.

## A PRESCRIPTION FOR CHRONIC BRON-CHITIS.

FERRAND recommends the following prescription for the treatment of chronic bronchitis with inflammation:

P. Purified tar, gr. xv; Dover's powder, gr. xxii; Powdered benzoin, a sufficient quantity to make 20 pills.

From one to four of these may be given each day. Twice a week a purgative should be administered. Counter-irritation should also be applied to the chest by means of ammonium. It may also be useful for the patient to inhale the fumes of muriate of ammonium.—L'Union Médicale, July 18, 1892.

## TREATMENT OF CHOREA BY EXALGIN.

In an article published in the Journal of Nervous and Mental Diseases for July, 1892, DR. CHARLES L. DANA, of New York, reports the results obtained by him in the treatment of chorea by exalgin.

He has used it in sixteen cases, in most instances employing no other remedy whatever, and, as a rule, believes it has a specific effect upon the ordinary chorea.

The dose which he administers is 3 grains three times a day, which may be increased to 3 grains five times a day for a child five years old.

In cases associated with anæmia, he administers iron with exalgin. He believes exalgin to be a very much better remedy for chorea than is iron. The exalgin is best given in capsules, each of which contains two grains. Sometimes he orders three of these capsules on the first day, four on the second day, and five on the

third day; and, finally, he administers three grains five times a day, if needed. He points out, however, that the drug must be given carefully, and that its excessive use will cause prostration. He has seen it produce acute anæmia and cyanosis, but never any dangerous symptoms. The indications for its use, he thinks, are distinctly limited to ordinary chorea of subacute form of Sydenham, not chronic chorea, habit chorea, convulsive tic, or chorea major.

# THE TREATMENT OF BOILS BY BORIC

L'Union Médicale quotes Alison as having obtained good results in the case of general furunculosis by the administration for eight or ten days of from 10 to 15 grains of boric acid a day, divided into two doses. At the same time, four or five times a day, the inflamed areas were washed with a hot solution of boric acid, in the strength of four per cent. Between the applications of this lotion compresses were applied to the diseased parts, which had been wet with the same solution of boric acid. In this way he claimed to have been able to relieve the boils which had already formed, and to do much towards preventing other outbreaks. By this means he thinks it possible to avoid surgical intervention.

## BROMIDE OF STRONTIUM IN THE TREAT-MENT OF VOMITING.

In the *Practitioner* for July, 1892, CORONEDI, the assistant in the laboratory of materia medica at Florence, contributes a short article on this subject.

After quoting to some extent the literature of this comparatively new remedy, he proceeds to the detailing of his own experiences in regard to the influence of the bromide of strontium for the relief of vomiting and gastric pains.

He differs from Sée, who thought that the drug had little power in nervous vomiting. Coronedi then details several cases of vomiting due to various causes, treated with strontium with considerable success. Thus he found it serviceable in the vomiting of pregnancy, in acute gastric catarrh complicating hysteria, and in dilatation of the stomach. In the case of omental carcinoma with marked pyloric stenosis, the remedy was of no value. It was of value, however, in cases of hysterical vomiting, and in one of incomplete abortion with a retained placenta and septicæmia.

He then discusses the question as to whether the value of the bromide of strontium depends upon the bromine or upon the base, and, after pointing out that the strontium salt contains a smaller percentage of bromine than most of the other bromides, concludes that both the bromine and the strontium must exercise an influence when this compound is administered.

The dose which he gave averaged about 30 grains a day. It will be remembered that much larger amounts of the bromide of strontium may be given than this.

# THE TREATMENT OF TYPHOID FEVER BY INTESTINAL ANTISEPSIS.

In the British Medical Journal for July 23, 1892, Dr. RICHARD CATON gives the results of his treatment of forty-six cases of enteric fever. The average age of his patients was twentythree and a fraction years. He finds that the average duration of pyrexia of twenty-two cases treated by antiseptics was 25.3 days, and in sixteen cases treated by the expectant method, 37.9. The most striking point in the two groups is, however, the immunity from relapses enjoyed by the cases which were treated by intestinal antisepsis. Of twenty-two cases treated by antiseptics, the average days of relapse were 1.8; while among the sixteen cases who recovered under expectant treatment and whose charts are preserved, the average days of relapse were nine. Those treated by the expectant plan remained in the hospital on an average fifty-two days; those treated by the method of antiseptics remained in the hospital on an average forty-six days.

Dr. Caton has been very much impressed by watching the good effects of antisepsis in the treatment of typhoid fever from day to day. He quotes the paper of Dr. Wolff, who has treated one hundred cases with naphthalin; the average febrile period was 24.4 days, and the mortality two per cent. He also quotes Dr. Gramshaw's results of one hundred and sixteen cases treated with carbolic acid, and no deaths. Caton also quotes Bouchard's statement that in the years 1854 to 1885 the mortality from enteric fever at the Lariboisiere Hospital was 21.4.

Since 1885 the treatment pursued has been quinine with intestinal antisepsis. The mortality has fallen to 11.7 per cent.

Dr. Caton administers naphthalin in the form of a pill; 6 or 8 pills, containing each 3 or 4 grains of the drug, are given daily. He has also given alpha-naphthol in similar amounts. All his cases are put on a light diet, consisting of milk and lime-water, which was replaced by beef-tea when there was flatulence or diarrhoea.

Alcohol was administered when the first cardiac sound became muffled and the pulse soft, from two to six ounces of brandy, in small divided doses, being given with the food. In the event of excessive temperature, he employed sponging with tepid water. He avoids the use of antipyrin and acetanilide.

During convalescence the ordinary diet is very slowly restored. If constipation is present and intestinal antiseptics are being given, he does nothing to unload the bowels for six or seven days. If it is needful to interfere, a glycerin enema is used.

## TREATMENT OF INSOMNIA.

In the Journal of Nervous and Mental Diseases for July, 1892, Dr. JOSEPH COLLINS, after quite a long article upon this subject, concludes as follows:

As to which of these two hypnotics (sulphonal and chloralamide) we shall choose in the treatment of any given case of insomnia, we must be guided largely by certain factors. Where we wish to get very rapid action, we can probably do so more efficaciously by the use of sulphonal dissolved in boiling water and taken as hot as possible, the drug in this way becoming at once absorbed, and sleep frequently occurring in from fifteen to twenty minutes. In conditions where chloral is indicated, but some intervening symptoms contraindicate its use, such as weak heart and respiration, as in the asthenic stage of acute disease, or in diseases of the heart and lungs, chloralamide can be substituted with safety and with good

[This teaching is directly opposed to the experience of all therapeutists. Sulphonal generally takes five or six hours to act.—Ed.]

THE TREATMENT OF NON-PURULENT EXUDATIVE PLEURISY BY SALI-CYLIC ACID OR THE SALI-CYLATE OF SODIUM.

We have already published in the THERA-PEUTIC GAZETTE from time to time articles recommending the employment of this drug in the removal of these pleural exudates.

In the Revue Internationale de Bibliographie Médicale for July 10, 1892, is an abstract from the Upsala Medical Journal of an article by Koster, founded upon an experience in thirty-three cases.

The results which he obtained were all of them decidedly favorable.

In only a few instances did the drug fail to

produce favorable results. He believes that by the administration of these remedies it is possible to aid in the absorption of peritoneal exudations.

The dose which he gives is 30 grains three or four times a day. This dose is certainly very large if it is to be continued for any length of time, and, as we understand the treatment, it is necessary that the drug should be continued for two or three weeks.

#### ON THE TREATMENT OF DIABETES.

In the *International Medical Magazine* for July, 1892, there is published a lecture, delivered at the Woman's Hospital of Philadelphia, by Dr. F. P. Henry, in which he makes the following remarks in regard to treatment of diabetes.

The absolute exclusion of starchy and saccharine food is the ideal treatment of diabetes, and if this can be persisted in for at least three months, a certain number of cases undoubtedly may be cured. All kinds of meat, except liver and oysters, may be allowed, and all vegetables except those which contain starch. A desideratum in the dietetic treatment of diabetes is a substitute for bread, the want of which is keenly felt by patients. Some of the samples of so-called gluten bread have been found, on analysis, to contain more starch than ordinary bread. Potatoes contain less starch than bread, and a baked potato is probably the least injurious form of amylaceous food.

In most cases, at least in early stages of the disease, sugar will soon disappear entirely from the urine if the patient be placed upon an exclusive proteid diet. If such a regimen be persisted in, however, digestive disturbances are almost sure to arise, and, under such circumstances, the glycosuria will reappear. Professor Bufalini, of Siena, has found that the tolerance of a strictly albuminous diet becomes much greater if thymol be coincidently administered. The good effect of this drug in such cases is solely through its well-known action as an intestinal antiseptic. Bufalini believes thymol to be not only useful but necessary in cases of diabetics placed upon an exclusively proteid diet. There may be other intestinal antiseptics the use of which is indicated in diabetes, but there is none, in the opinion of Bufalini, equal to thymol. When albuminuria coexists with diabetes, an exclusive meat diet cannot be persisted in under such circumstances; the diet should be largely or exclusively composed of milk and buttermilk. There are different opinions as to the use of milk in uncomplicated

diabetes, but when this 'disease coexists with chronic nephritis, the least injurious food is undoubtedly milk.

There is an undoubted relation between gout and diabetes mellitus, and when the patient afflicted with the latter is of gouty diathesis, good results will follow an alkaline treatment. The alkaline lactates, recommended by Cantani, the salicylates, or the carbonates, may be used alternately.

Opium is a drug of undoubted efficacy in this disease, and one for which there is a remarkable tolerance. It is not only of negative benefit by obtunding the senses of thirst and hunger, but it seems to have a positive effect in diminishing the excretion of sugar.

To resume, the alkalies, opium, and intestinal antiseptics (above all, thymol) are the only drugs upon which reliance should be placed in the treatment of diabetes mellitus, and these are subordinate to a strictly proteid diet.

# THE USE OF JAMBUL IN GLYCOSURIA.

Mr. C. F. Britto, in the *Indian Medical Record* for July 1, 1892, contributes a note as to the use of this remedy in glycosuria.

A woman, aged fifty-two years, came under his care suffering from debility, excessive thirst, pruritus vulvæ, and a large carbuncle on the extensor surface of the left forearm. There was also marked polyuria. She was passing in each twenty-four hours about ten pints of urine of specific gravity of 1045, with no albumin.

Britto first prescribed ½ grain of codeine three times a day, and kept the patient upon a restricted diabetic diet. He then stopped all codeine, and gave jambul, I drachm, three times a day, and allowed her her usual food.

After this treatment had continued for a week, the patient was forced to urinate only three times during the night, instead of five times as before the administration of the jambul. The week after, he stopped the powdered jambul and gave the fluid extract, a teaspoonful three times a day. At the end of a week of this treatment urination only occurred once during the night.

The carbuncle, having been opened and properly treated, healed up kindly. The ultimate result of the case, after some months' treatment, is that she is passing about three pints of urine that has a specific gravity of about 1029. The urine contains sugar.

An advantage which Britto claims for this jambul treatment is that no special dieting is required. Unfortunately, diabetes is a condition which differs so in different cases, that

while a drug may be of great value in one instance, it is practically useless in another.

## UNTOWARD EFFECTS OF ANTIPYRETICS.

A. R. Pattison reports in the *Indian Medical Record* of July 1, 1892, three cases of untoward effects from the use of acetanilide, phenacetin, and antipyrin respectively.

A boy, three months old, suffering from remittent fever, with a temperature of 102.4° F., and marked head-symptoms, for which the bromides and diaphoretics were given without effect, received one ½-grain dose of acetanilide, which produced no reduction in temperature. An hour later a second dose of 1 grain was given. In fifteen minutes the child was in a condition of collapse, which lasted fifteen hours. There was cyanosis, cold extremities, subnormal temperature, and partial inability to swallow.

The second case was that of a boy of two years, who received two doses of phenacetin of two grains each. Profound collapse ensued. The child was well nursed, and given a few drops of milk and brandy alternately, and hot bottles were applied to the body to restore warmth. Perspiration was not present.

The third case was that of an adult suffering from hemorrhagic small-pox, who was given 15 grains of antipyrin every three hours. He became collapsed, and died soon after the third dose was given. Post-mortem examination showed all the organs to be healthy, with the exception of hemorrhagic nephritis.

In the *Indian Medical Record* for June, 1892, there was reported the case of a Hindu who received 120 grains of acetanilide and recovered.

The cases reported by Pattison seem to evidence total disregard of all rules for the use of these remedies as to the age and disease of the patients and the size of the dose.

#### ABSORPTION AND EXCRETION OF IRON.

H. Dreser, in reviewing, in Schmidt's Jahrbücher, No. 6, 1892, several articles on the absorption and excretion of iron, remarks that the form of iron chosen by A. Socin for his experiments is that of nuclein iron, as found in yolk of egg. As, according to Bunge's investigations, the yolk contained its whole amount of iron solely in this form, Socin fed dogs on pure egg yolk to determine whether iron would be secreted in the urine in consequence. As the urine under normal conditions contains

only slight traces of iron, the presence in one case of one-fifth grain, and in the other of one-ninth grain of it, after the feeding with yolk of egg, shows that iron in the form of "hematogen" is reabsorbed by the intestine, but only to a small fraction of the amount given, while the larger part is passed off in the fæces in its organic form.

R. Oddi e Dom experimented upon dogs with lactate of iron. The dogs were first deprived during nine days of all food containing iron; this reduced them gradually to a chlorotic condition, which was indicated by the decrease in the size and number of the red blood-corpuscles, the change in the quantity of hæmoglobin in the blood, and other morphological changes. Now lactate of iron was given in quantities of 4½ grains for eight days, causing a complete restoration of the impoverished blood to its normal condition. The author sees in this a proof that the system can assimilate even inorganic iron.

Dr. Gottlieb has experimented to determine the organ which excretes iron. The experiments of many writers have led to the unanimous belief that the kidneys are certainly not the chief organs for the excretion of iron. Gottlieb first fed dogs on food containing no iron; then, having reduced the amount of iron in their systems, he gave subcutaneous injections of iron—nearly 1½ grains daily—for nine days in the course of the following twenty-eight days; nearly the whole amount injected reappeared in the fæces. This shows that the excretion of the iron introduced into the lymph fluid takes place in the intestinal canal.

As the gradual excretion did not keep pace with the reabsorption, so the daily injection would have led to an accumulation of iron in the blood, causing symptoms of poisoning, if the metal had not been deposited in some other tissue, and thus withdrawn from general action. Which organ forms the chief place of deposit for iron? According to Gottlieb's experiments, the greatest amount of iron was found in the liver (twenty to sixty-five per cent. of the amount injected). It appears probable that the iron is gradually returned to the blood from the liver, and that the epithelium of the intestinal canal possesses the power of appropriating this iron as it gradually enters the circulation and excreting it.

## METHYL VIOLET IN DIPHTHERIA.

DR. JAENICKE (Therapeutische Monatshefte, July, 1892) describes his experiments with methyl violet upon the bacilli of diphtheria.

His results were most encouraging, and he believes that a most important addition is thus made to the remedies for this dread disease. The action of the methyl violet upon the bacilli is rather one preventing development than a directly destructive one. The membrane when painted with the violet retains the color for from two to five hours. The application should be renewed as soon as the color disappears from the membrane, the intervals gradually becoming longer, until all the coating has disappeared.

The taste is unpleasant, but not positively repugnant. Local irritation and slight signs of poisoning he has not observed, even when repeated applications had been made upon small children.

Unfortunately, Jaenicke has had, as yet, few opportunities to test his remedy. He treated, among others, a two-year-old child whose symptoms were very bad, the membrane being painted clear into the post-nasal cavities. On the third day of treatment the child had so improved that, without an inspection of its throat, it would have been pronounced a well child.

THE SO-CALLED CURARE DIABETES, AND THE ASSERTED PROTECTIVE ACTION OF THE LIVER AGAINST THIS POISON.

Dr. H. Dreser reviews (Schmidt's Jahrbücher, No. 6, 1892) a German book by K. Sauer with the above title. He says Zuntz had proved that the diabetes caused by curare can be avoided when the respiration of the animals is conducted with special care. In 1885, Gaglio published experiments, according to which the curare received in the stomach, as it reached by absorption the portal vein and the liver in specially large quantities, poisoned them, with symptoms of glycosuria, even if the skeletal muscles did not yet appear to be harmed. Sauer repeated these experiments, and believes that, as long as the general condition of the animal is not disturbed, glycosuria never occurs, even after comparatively large doses. Sauer shows that the liver does not exert any special protective action in the interest of the whole organism, by comparing the intensity and rapidity of the poisonous symptoms, first, by injection into a vein of the trunk, and, secondly, into a branch of the portal vein. In the last case no difference could be discovered from the first.

It was further shown that when injected into the rectum curare was poisonous in smaller doses than when injected into the stomach. As to the inactivity of curare from the stomach, it is probably due to the action of the acid gastric juice, which divides it into inactive products.

THE USE OF ETHYLENE CHLORIDE AS
A LOCAL ANÆSTHETIC IN DERMATOLOGY.

The manifold small, but often very painful, operations necessary in the treatment of skindiseases rarely appear to require anæsthesia. Dr. S. EHRMANN, however (Wiener Medizinische Wochenschrift, No. 26, 1892), tells how conveniently and successfully ethylene chloride may be used. Its action arises from its uncommonly rapid evaporation, which cools the surface moistened by it. The evaporation is most rapid when it is sprayed upon the skin. When thus applied, there is first a pricking sensation; hyperæmia occurs first, then the spot becomes white. If the anæsthesia is complete, the skin is as white as chalk and opaque. That is the best time to operate; if it does not occur, anæsthesia can be tested with the finger. The spot must become white, cloudy, and opaque as wax. The anæsthesia lasts from one to two minutes. The surrounding mucous membrane is best protected by a compress laid upon it.

To anæsthetize chafed surfaces, Ehrmann recommends the use of cocaine, applied upon absorbent cotton, in five- to ten-per-cent. strength, to anæsthetize the superficial part (because the etheylene chloride would cause such a place to burn at first), and then to proceed with the ethylene chloride to obtain deeper-reaching anæsthesia. In this absolutely painless manner Ehrmann treated lupus with scarifications and curetting, especially the scattered nodules. He had nine patients who could in no other way be induced to allow local treatment.

The spray also did good service in opening carbuncles. In bubo, even when the skin was very thick, the incision could be accomplished without pain. But he has chiefly used the ethylene chloride spray in scarification and the opening of acne papules and pustules, and believes it has a wide field before it.

A NEW METHOD OF TREATING FEVER.

DR. SOLTAU-FENWICK (Berliner Klinische Wochenschrift, No. 31, 1891) says the use of cold baths in the treatment of fever has been crowned with such extraordinarily favorable results that any hesitancy in their use on a fit-

ting occasion would be considered by many authorities as great carelessness.

Although it is generally admitted that in cases of hyperpyrexia a cold bath is the best remedy, yet its use is often involved in insuperable difficulties; there are so many cases in private practice where it is either impossible to obtain a large enough bath, or to place such a piece of furniture in the sick-room. Again, to bathe a helpless patient requires at least two persons, sometimes three; but among the poor it is often impossible to obtain even one reliable nurse. Finally, it is well known that this treatment requires the use of much care and consideration, and even in reliable hands is not entirely free from danger,—requirements which can seldom be met without the presence of the physician. This is, doubtless, the reason why cold baths have never come into general use in medical practice in England, where the physicians appear to prefer those antifebrilia which are simpler in their use, although less energetic in their action.

Dr. Soltau-Fenwick describes a mechanical contrivance now in use in the London Hospital and elsewhere in the treatment of moderate cases of fever. He is in possession of the reports of 100 cases of typhoid fever and 153 cases of inflammation of the lungs in which this treatment was used. The results were so favorable that he proceeds to describe the treatment in detail, first minutely describing the mode of washing or sponging the patient in bed, with water at 116° F., giving a table showing the reduction in temperature obtained.

The ice-cradle is an arrangement by which a constant cold current can be brought into immediate contact with the surface of the body, in this manner reducing its heat by a direct withdrawal of heat. This method was originally used by Dr. Samuel Fenwick as a substitute for the cold bath in the treatment of typhoid fever, and has been used for this purpose for several years in his wards in the London Hospital with the most satisfactory results. The ice-cradle consists chiefly of an iron apparatus, rods of iron arching over the bed from side to side, with several small pails half filled with ice suspended from the middle above the patient. The patient lies on the bed, covered simply with a thin, untransparent muslin sheet. and the ice-cradle is placed above him, covered with a light covering. If a feeling of chilliness is complained of, a warm bottle may be placed at the patient's feet. The ice in the pails must be renewed occasionally, and it has been found well to wrap cloths around the bases of

the pails, so that the moisture condensed on them may not drop down on the patient. A very good substitute for a cradle can be made from a piece of strong wire or two wooden hoops sawn through the middle. Beneath such an arrangement a patient can lie several days, the pails and the warm flasks at the feet simply being replenished. Although the average temperature in the cradle can rarely be brought more than one or two degrees below the surrounding atmosphere, still, this is usually enough to produce a reduction of several degrees in the temperature of the body and, what is of great importance, to keep it at this reduced point. In certain cases, where the fever was slight, or when no ice could be obtained, the cradle was used without pails, and under these circumstances it proved that the circulation of the air was sufficient to produce a gradual reduction of several degrees in the temperature of the body. To obtain the best results from the use of the ice-cradle, attention must be called to several absolutely necessary particulars. In the first place, the cradle must be plenty wide enough, for nothing is more sure to prejudice the patient against the treatment than the use of an apparatus which is so narrow as to preclude the free movement of his limbs. In the second place, it is advisable to keep the feet warm with hot bottles, for in this way any feeling of chilliness can be prevented and at the same time the general comfort of the patient greatly increased. In the third place, a free circulation of the air through the cradle is absolutely necessary. If this is not secured, the ice melts quickly, the temperature in the cradle advances, and the apparatus is of little or no value. Finally, it is advisable in all cases to take the patient's temperature every three or four hours, and to dispense with the apparatus when the temperature has fallen below 100° F., or the patient shows the slightest inclination to chilliness. When these precautions are observed, the patient usually becomes accustomed to the treatment rapidly, and many severe cases of typhoid fever have lain under the cradle for from ten to fourteen days, with the most happy results. In glancing at the results obtained in the use of this apparatus for ten years past in the London Hospital, it should be noted that a temperature of 103° F. was a signal to use the cradle; fevers of a lower grade were treated simply with the sponging. In all cases the temperature of the patient was taken every three hours, and treatment regulated accordingly, so that when the temperature of the body sank below 103° F. the cradle was removed and the patient covered lightly. As soon as the temperature rose again to 103° F. the apparatus was used again. Tables are given which show that, while the action of the ice-cradle is relatively slow, its result is lasting. Although useless in cases of hyperpyrexia where a direct fall of temperature is imperative, it proves of extraordinary value in cases where the fever is less intense, and where a lasting action on the temperature during a considerable time is indispensable. Of the 100 cases treated, only 6 died. During the same period 1014 other typhoid fever patients were treated in the same hospital; 147 of these died, or an average of 14.5 per cent. The ice-cradle was used with just as good results for inflammation of the lungs. Previous to its use the average mortality of these cases was twenty-three per cent. Cases treated with the ice-cradle and spongings, according to the severity of the fever, only had a mortality of 10.5 per cent.

# THE USE OF CARBONIC ACID IN THE TREATMENT OF CHOLERA.

PROFESSOR ROSENBACH (Berliner Klinische Wochenschrift, 1892, Nos. 34 and 36) refers to C. Fränkel's discovery of the power of carbonic acid to prevent the development of cholera bacilli, and the use of fluid carbonic acid in the treatment of cholera. Experiments in the use of injections of fluid carbonic acid in the stomach and intestine for therapeutic purposes were made in such numbers by Oliven and Rosenbach as to leave no doubt as to the safety of the treatment and the possibility of quickly inflating the intestine from the rectum or the stomach by means of an œsophageal tube. The only drawback which might interfere with the action of the treatment is the resistance which might be offered by the ileo-cæcal valve and the pylorus to the entrance of the gases as far as the small intestine; but this can be overcome by the use of morphine and frequent repetition of the treatment. In his second paper Rosenbach recommends, instead of giving the opium internally, to inject the opium (extractum opii, .5 (gr. 4), to water, 10 (f3iiss), 1 to 2 syringefuls' dose). At the height of the epidemic such a solution could be intrusted to the helpers and nurses, they being obliged to keep a record of the number of injections made, and not allowed to give more than two injections independently. He adds that he would like to recommend something which cannot be obtained from the druggist,—that is, the conviction that the cholera is not a contagious disease, and that the patient does not endanger his surroundings; or, in other words,

in a place where the epidemic rages, the neighborhood of the patient is not more dangerous than another place. If this conviction could obtain a hold, then the rules for disinfection could be spared, which regard the patient as the sole cause of the sickening of others, and thereby destroy pity for the sufferer in the interest of self-preservation. The patient is not the focus of the disease, but the conditions of our surroundings, climate, and soil, which we, unfortunately, do not understand, but which make of one place a cholera locality, and the human organism finally unable, under the unfavorable conditions, to maintain its normal functions. Rosenbach thinks the fear of bacilli will make many an anxious heart ere his view obtains a footing. He thinks the solution of the question is: "No fear, and hence no infection, but the creation of proper conditions of life and of nourishment."

#### PRECAUTIONS AGAINST CHOLERA.

How tenderly, minutely, and wisely the paternal German government advises its children during the present cholera epidemic may be seen from the following rules for avoiding the pestilence, issued by the Imperial Bureau of Health, which are published in the *Therapeutische Monatshefte*, September, 1892:

1. Keep your presence of mind in the danger; avoid too great anxiety, for it clouds your clear judgment. Only the man who thinks clearly can make proper use of the precautions against danger.

Maintain cleanliness in your person and surroundings. Discretion, temperance, precise cleanliness, prove the best protection against disease.

Hold firmly to your ordinary regular mode of life. Avoid festivities and assemblages of people.

Avoid medicines as long as you are well. Visit the sick only when your duty ca

Visit the sick only when your duty calls you.

Avoid intercourse and close contact with persons who come from cholera regions.

Do not leave your home in order to escape the disease. Consider that you may be in greater danger in travelling, and living under altered conditions in a strange place, than while leading a careful, regular life at home.

2. Do not put other objects besides food and drink in your mouth,—e.g., the fingers in turning through a book, pen-holders, lead-pencils, etc.

Drink as little water as possible, and only such as you know to be above suspicion.

Pure spring-water is, as a rule, unsuspicious. Water from deep pipe-wells and from closed pipes, if taken from open waters, such as have been subjected to a genuine filtering, is safe. (Small house filters, unless frequently changed or cleaned, are rather harmful than useful.)

Water from rivers, ditches, ponds, flat, open, or poorly-covered springs, also from springs which are near dirt or dung sites, is suspicious during cholera epidemics. All washing and rinsing, as well as pouring out of dirty water near springs, may be dangerous to health.

Suspicious water during the prevalence of, or near, cholera is only safe to use for drinking, washing the face, rinsing the mouth, washing utensils used for food and drink and the like, after being boiled one minute. The germs of the disease are destroyed by cooking, but fresh germs may again occupy it if it stands long.

To make boiled water taste well, add to each glass (half a pint) as much tartaric acid as you can take on a knife-point, or two drops of hydrochloric acid.

Keep water in clean vessels.

Tea, coffee, and cocoa are permitted drinks, also good beer and pure wine.

Beware of ice and very cold drinks.

Let your beer be clear and fresh, neither sour nor insipid; have it served to you in glasses which have been washed with unsuspicious water (when necessary, boiled).

Bitter schnapps often contain aloes, hence act laxatively and are questionable.

Mineral-waters are unquestionable, if they come from natural springs or are prepared with distilled water.

Avoid drinking uncooked milk.

The disease may adhere to butter and fresh cheese, if they were prepared or kept near persons ill with cholera.

Eat fruit and vegetables, also onions and the like, only in a cooked state.

Eat nothing uncooked or unroasted which strange hands have touched, unless you know them to be reliable.

Purchase food only from reliable, clean shops. Avoid such as are in cholera houses.

Avoid all excess in eating and drinking. Be especially cautious if you incline to diarrhœa.

Eat and drink nothing as wholesome which is in a sick-room. Consider that flies and such insects might carry the germs of disease from the patient to your food.

Even cigars may convey infection in a patient's house.

3. Keep your head cool, your body warm, your feet dry.

Live and sleep in pure air; fumigations do not prevent contagion.

Wash your hands frequently during the day with water, soap, and brush, especially before you touch eatables.

If you have touched any dirty or suspicious objects, first wash your hands carefully with a solution of four teaspoonfuls of water-clear, fluid carbolic acid in a quart of water (five-percent.-carbolic-acid solution); then wash this off with clean water and soap.

In cholera regions do not bathe in rivers or ponds.

Use a public privy only in case of necessity. The seats of privies which are used by strangers should be cleaned daily with soapy water. For this take one pound of soap to a pail of hot water. If your privy is used by persons suspected of disease, rinse the wall of the funnel with freshly-slaked lime (r part quick-lime to 4 parts water).

4. The infectious material of cholera is contained in the excretions of the patient. It adheres to soiled linen and clothing, and can be transmitted by anything which touches such objects or excretions, even when this only occurs indirectly and not in a noticeable manner.

Excretions of persons ill with, or suspected of having, cholera, and floors, etc., soiled with them, disinfect by copious (at least hourly) use of slaked lime or chlorinated lime solution (5 drachms chlorinated lime to 1 quart cold water), or other trusted disinfectants.

Linen, clothing, bedclothing, covers, and the like, also such as come to you from cholera regions, send, well wrapped up and tied, to a public disinfecting institution.

If such is not within reach, soak the things twenty-four hours in soap and water (one pound washing soap to a pail of hot water), and then boil thoroughly.

Other soiled objects cleanse thoroughly with such soapy water, with quick-lime, or carbolicacid solution. If the nature of the objects does not admit of this, then place them for at least six days in an unused, airy, dry place.

Thorough drying is unfavorable to the development of the disease-germs.

5. If your digestion is disturbed, if you have diarrhœa, especially with vomiting or great nausea, consult a physician at once.

Until he comes, take a warm drink, put on a woollen bandage about your body, remain in your room; if in great distress, go to bed.

For relief, you may take a cup of tea, with cognac or rum. Let your food be a mucilaginous soup, also zwieback, or stale white bread without butter.

If you have reliable (prepared from a physician's prescription) cholera drops at hand, take from 20 to 30 drops on sugar.

Keep your presence of mind, even if you are ill. Fright and cowardice act unfavorably on body and mind.

# THE RELATION BETWEEN CHEMICAL COMPOSITION AND HYPNOTIC ACTION.

To enlarge our knowledge of alcohol, as combined with fatty narcotic substances, and determine whether certain relations existed between their chemical composition and hypnotic action, Drs. A. Schneegans and J. von Mering (*Therapeutische Monatshefte*, July, 1892) made a series of experiments.

Their results show that primary alcohols have a less narcotic action than the secondary, and the secondary less than the tertiary. Alcohols in general have a stronger action the longer the unbranching chain of carbon atoms which they contain.

In the tertiary alcohols the action is dependent upon the kind of alcohol radical which is combined with the tertiary carbon atoms; if only the radical methyl is present, as in trimethylcarbinol, then the action is a relatively weak one; it is greater when an ethyl enters, and increases with the number of the ethyl group combined with the tertiary carbon atoms.

When urea is substituted by simple and manifold primary alcohol radicals, there is no narcotic action; but narcosis is obtained when the urea is substituted by the tertiary alcohol radicals. Here again the law holds that ethyl combined with tertiary carbon atoms acts more powerfully than methyl. Hence the urea containing tertiary butyl possesses a smaller hypnotic action than those which contain tertiary amyl, or even tertiary heptyl.

The pinakones have a narcotic action; methylpinakon in a slight degree, not more than ethylalcohol; methylethylpinakon a stronger action, and diethylpinakon (propiopinakon) the strongest of all.

The acids of the fatty series possess no narcotic power, with the single and only exception of dimethylethyl acetate, which contains tertiary carbon atoms.

For practical use as narcotics, of all the substances examined, only the tertiary amylalcohol (amylenhydrate) and tertiary amyl urea are suitable.

The authors state in closing that these results agree with the facts arrived at recently by

Baumann and Kast, forming further support for their belief that in a certain combination the ethyl group possesses a certain pharmacological value which the methyl group does not under the same conditions.

These investigators came to the conclusion, after numerous observations, that disulfones containing the methyl group had but slight action, while disulfones which contain the ethyl group were in a high degree active,—i.e., producing sleep; and that the intensity of the action is proportional to the number of the ethyl group contained in them.

#### THE ACTION OF HYDRASTININ.

Dr. Faber (Therapeutische Monatshefte, July, 1892) reports the use of hydrastinin in nineteen labor cases, giving full statistics. Of the nineteen cases, good results were obtained in nine cases, satisfactory ones in six, and in four the result was a temporary and uncertain one.

The results show once more that hydrastinin is a valuable remedy in gynæcology to stop bleeding; and, further, that the subcutaneous is the best form of administration.

# AN UNUSUAL CASE OF ANILINEPOISONING.

DR. MAX STARCK (Therapeutische Monatshefte, July, 1892) describes the case of a workman in a chemical-factory who was poisoned with toluidin. He was working at night, drawing off toluidin from an open reservoir. By carelessness in bending over the vessel and thus breathing the vapor, a slight poisoning occurred at five o'clock in the morning. By an unfortunate chain of accidents, the man remained in the workroom until seven o'clock. Then he was not taken into the fresh air, but to the warm room of a fellow-workman. Here he became unconscious at about eleven o'clock. and at one o'clock was carried, in this condition, in a closed carriage, to his home in a neighboring village, first receiving medical aid at six o'clock in the evening.

The time until then was spent in a closed room, in his clothes, which were saturated with aniline; his hands also were covered with it. He was entirely unconscious, motionless, his eyes half-open and mouth tightly closed, with a slight foam upon it. As Starck was not at hand, a colleague first cared for him, having his clothing removed and his hands cleaned, providing fresh air, and giving him hydrochloric acid and cognac.

Starck himself did not see the patient until eleven o'clock the following morning. Up to that time he had remained unconscious; but he aroused upon Starck's entrance and greeting, and bade him good-morning. The lips and mucous membrane of the mouth, which could only be opened a little with difficulty, were dark blue, almost black. His face was pale; pulse small, somewhat accelerated; respiration retarded and difficult; heart-sounds weak but clear; pupils narrowed; temperature slightly less than normal. He had severe headache, and his breath was strong of aniline. He soon relapsed into the comatose state. The medicine was continued, but further alcohol forbidden. A strong dose of magnesium sulphate was now given, and soon after very fetid fæces, smelling of aniline, were passed. After this a very interesting new symptom appeared. It was an unusually severe strangury. Clouded dark-red urine, containing a good deal of blood, was passed, a drop at a time, with great pain. The following morning his condition was somewhat alarming, because the heart-sounds were far from clear and the pulse very irregular, while the general condition was very bad. Stomach-ache and a sense of constriction had appeared; the blue color was diminishing. These threatening symptoms soon disappeared; but now the strangury came to the front. It constantly increased, and caused such pain that the patient cried like a wild animal, and could scarcely be controlled. The glans penis and the preputial fold became covered with a coating of dirty-yellow ulcers, and the whole penis was much swollen. During the entire course of the strangury the urine was very bloody, while the strangury reached its crisis on the fifth day, and then gradually disappeared, being over after eight days. The amount of blood was unchanged on the seventh day, and did not disappear until the tenth day.

Although there was great thirst from the first, for seven days there was a pronounced aversion to food.

After all other symptoms had disappeared, there remained great weakness of the lower extremities, combined with a temporary slight swelling of the knee and the knuckle-joint, which disappeared of itself. Entire recovery did not take place until the end of five weeks.

As we see, the action of the poison in this case was unusually intense. The patient remained over twelve hours in the saturated clothing; indeed, in closed rooms, the poison remains about thirty-six hours in the gastro-intestinal canal. The action of the alcohol,

according to all observers, increased the poison symptoms not inconsiderably.

It is an especially interesting case on account of the rare occurrence of strangury and the large amount of blood in the urine. Grandhomme first observed this. He believes that it occurs in cases where there was a specially intense action of the aniline, as was true in this case.

## THE ABSORPTION OF IODIDE OF POTAS-SIUM THROUGH THE RECTUM, AND ITS EXCRETION.

CALANTONI (Deutsche Medizinal-Zeitung, August 4, 1892) has made a large number of experiments in this line upon men as well as animals, and observed the following results:

- r. The absorption of iodide of potassium injected into the rectum is accomplished just as quickly as from the stomach, so that the usual method of applying the remedy can be replaced by introducing it into the rectum.
- 2. If a still more rapid absorption is desired, it can be obtained by warming the solution to from 91° to 98° F. The warmth produces a slight congestion of the mucous membrane, and in this way favors the absorption.
- 3. The time within which the excretion takes place is the same as by other methods. With the usual weak solutions the excretion has been entirely completed in from twenty-four to thirty hours, while concentrated solutions are slowly eliminated in from thirty-eight to forty hours.

## THE EFFECT OF SULPHURETTED HYDRO-GEN INHALATIONS UPON CEREBRATION.

In the British Medical Journal, TIGLESWORTH reports two cases which he thinks were due to the inhalation of sulphuretted hydrogen, although there seems to be some doubt as to whether this gas was really responsible for the conditions produced. The cases which he reports are as follows:

CASE I.—B. H., aged thirty, was admitted into Rainhill Asylum, September 20, 1888. There was no history of insanity in the family. The patient himself was never said to have had any illness, but he appears to have drunk somewhat. He was a single man, and a laborer in some chemical-works. On the morning previous to his admission into the asylum he went to his work as usual. About 9 A.M. he was observed to be acting strangely, throwing his arms about wildly and shouting. In addition he lost power over his legs. As he was en-

gaged in an occupation which exposed him to some chemical fumes (probably sulphuretted hydrogen), it was supposed—apparently with very good reason-that he had inhaled the gas. He remained excited and rough all that day, laughing and shouting by turns, and did not appear to recognize his brother. When admitted into the asylum on the following day he was in a very maniacal condition, shouting and throwing himself about, and it took several men to carry him to the ward. He kept throwing his arms about, but was distinctly unsteady on his legs when made to stand. In bed he wriggled about, throwing his head back on the pillow and waving his right arm round and round. This condition of things lasted for two or three days, when he became more quiet; and he then gradually passed into a taciturn, depressed state, sitting or standing about for hours doing nothing, and never speaking except when addressed. After remaining in this condition for many months, he gradually developed delusions of persecution and interference, and became very dangerous, making assaults on those around him. This condition of things lasted for upward of a year; but during the last few months an improvement has set in, and at the present time, although apparently not altogether free from delusions, these are, nevertheless, much less prominent; and though still excitable and talkative, he is much more tractable, and is regularly employed at outside labor. It is improbable, however, that he will ever fully recover.

CASE II.-R. H., aged thirty-two, was admitted into Rainhill Asylum on January 27, 1890. He was a married man, with three children, and was employed as an engineman at some chemical-works. He had always been healthy and temperate, but shortly before the onset of the mental affection he had an attack of bronchitis, which kept him at home for about ten days. While at his work a few days after this he accidentally inhaled sulphuretted hydrogen, and became "gassed," as it is called at the chemical-works. This produced headache, stupor, and prostration, for which he was kept at home for a few days, when he became delirious. He passed rapidly into a very violent, excited state, shouting and gesticulating; said he was Jesus Christ, etc.; tried to bury his head in the floor and to raise his feet above his head. When admitted into the asylum, three days later, he was still very violent and excited, gesticulating and talking incoherently, chiefly on religious subjects. He continued in a maniacal condition for two or three weeks, but at the end of a month from admission he

had distinctly improved; he had then become rational and was working fairly well. The improvement continued, and he slowly recovered mental vigor, and was discharged recovered on June 27, just five months after his admission into the asylum.

These cases have been grouped together by the author, although it is not quite certain that in the first case the gas which affected the patient was sulphuretted hydrogen, details being wanting as to the exact fumes to which the man had been exposed. That he had inhaled gas of some sort is pretty clear from the history. and there can be little doubt that sulphuretted hydrogen was the agent in question. That it was so in the second case is clearly stated in the history obtained from the patient's friends. There was a good deal of similarity between the two cases as regards the symptoms presented at the onset, there being in both a greater amount of muscular excitement than is usual in ordinary mania, and both men exhibiting a curious tendency to roll the head on the floor or pillow.

Laborers in chemical-works are quite familiar with sulphuretted hydrogen gas and its usual effects on the system; for it is not by any means unusual for persons exposed to its fumes to become "gassed," as the saying is,—that is, they pass into a condition of insensibility which lasts a variable time, and when coming round they are very often sick and dazed, and have a sense of oppression about the chest, and there is often a good deal of prostration for a day or two afterwards. Sometimes, indeed, though very rarely, the insensibility ends in death. It is, however, very unusual for lasting or permanent effects to be produced upon the nervous system, such as come under the designation of insanity. Indeed, the author has no record of any such cases occurring before. It is not, however, a matter of surprise that such effects should at times occur. That the gas has powerful narcotic properties is evidenced by the rapid insensibility it produces when inhaled in any quantity. Cases have been recorded by Savage and others in which insanity—generally taking the form of mania—has resulted from the inhalation of chloroform, ether, nitrous oxide gas, and other similar agents, and the cases just described as produced by sulphuretted hydrogen seem quite to fall into line with these.

The effect of all these agents appears to be to paralyze, in the first instance, the highest controlling and co-ordinating plexuses in the brain. If the dose be large, or the administration continued, more and more of the cortical centres in a descending series are involved, and insensibility ensues. But when the paralysis is confined to the highest cortical arrangements, the immediate result is not lethargy but excitement, owing to the centres next in series being emancipated from the control of the higher, and hence acting over-vehemently and incoherently. Such, at least, is the explanation offered by this writer of the pathology of these toxic cases, which are hence assimilated to the more ordinary forms of mania which we meet with in practice.

#### COLLECTIVE REPORT ON ANÆSTHESIA.

In a letter to the London Medical Press and Circular, the Berlin correspondent of that journal gives an abstract of a report presented by Dr. Gurlt, of Berlin, based on a collective investigation concerning anæsthetics. The report was the result of the observation of sixty-two observers, and the number of cases of anæsthesia compared in the report was 84,605, the number of deaths during administration being 33. The report of the previous year comprised 24,626 cases of narcosis, with 6 deaths, and the number added to those of the present report give a grand total of 109,230 cases of production of general anæsthesia, with 39 deaths,—that is, there was I death in every 2800 cases. As regards the different anæsthetics, chloroform was given 94,123 times, with 36 deaths, or 1 in 2614. Ether was administered in 8431 cases, with 1 death, as far as was known. There were 2891 cases of mixed anæsthesia (ether and chloroform), 1 death; in 1381 cases of administration of a mixture of ether and alcohol, no deaths; with 2151 administration with bromethyl, no deaths; in 219 cases of pental narcosis, 1 death. From this the report goes on to say ether is far less dangerous as an anæsthetic than chloroform. With regard to accidents with anæsthetics, numerous cases of asphyxia were reported. The statistics with regard to them were, however, so insufficient that nothing reliable could be gained from them. Chloroform had been used in the great majority of cases, and regarding the source of it, it was determined that nearly one-third of the reporters had employed a chloroform with the mark "E. H.," and which was one of the best in Germany. From the time when, in 1891, the frozen chloroform of Pictet was recommended, extensive use had been made of it. Regarding the value of the new anæsthetic, A. Köhler, of Bardeleben's clinic, had, on the basis of five hundred cases, for which it had been employed, reported the

narcosis was mild and that disturbances were less frequent.

Kummell reported that the stage of excitation was shorter, that vomiting was less frequent, that the reawakening was slow. In 2 cases he observed the pulse to fall to 40. As regards a maximal dose, 12 cases had taken 100 grammes each. In 2913 cases the duration of the narcosis was over an hour, but there were a few cases of extremely lengthened administration,—240 and 290 minutes respectively; 1 of 9 hours (case of tetanus).

With regard to the administration of morphine, the speaker could give no precise figures. Some authors always used it, some only in the case of alcoholics, and still others did not use it at all. Of the 33 deaths, 30 were from chloroform, 1 from ether, 1 from ethero-chloroform, and 1 from pental; 25 autopsies were made, and considerable organic changes found. The changes observed were fatty degeneration of the muscles of the heart, adhesion of heart to the pericardium and pleura, tuberculosis of the lungs, etc., so that a large proportion of the patients already bore the seeds of death with As we never know how a patient will take chloroform, we should take the greatest care in regard to the purity of the preparation, especially that it does not undergo changes from exposure to light and air. For the rest, it has been shown that no chemical difference was known between the different kinds of chloroform. The sources of the ether were the same. In ether narcosis the temperature sank about .10° C., while in chloroform anæsthesia a lowering of 1° had been noticed. Bronchitis was a contraindication of ether. German surgeons had had good results with ether, and considering the lessened danger, it was worth weighing whether they should not go over generally to etherization in Germany.

There were three methods of mixed chloroform and ether narcosis,-1, first chloroform and then ether; 2, ether first and then chloroform; 3, the use of a mixture of the two. regarded bromide of ethyl, which could only be used for short periods, 2152 cases had been reported by sixteen authors. For anæsthesia that required relaxation of muscles this form was not applicable. Very considerable excitement was sometimes observed. had not occurred with it. Pental had been used in 226 cases (three authors), with r death. Pental was a very rapidly acting anæsthetic for short operations and when chloroform was not well borne. Some anxiety has been caused in some of the cases in which it has been administered.

THE TREATMENT OF URIC-ACID GRAVEL
AND GOUT.

In the Croonian Lectures delivered before the Royal College of Physicians of London in 1892, SIR WILLIAM ROBERTS reaches the following conclusions in the treatment of uric-acid gravel and gout (*Medical Press and Circular*, vol. lv. 1892):

In forecasting the possible effects of medicinal substances given internally in the treatment of gout, it is well to realize fully the actual conditions of the problem. These are widely different from those presented to us in urinary gravel. In the latter case the daily dose is designed to form an addition to a comparatively small bulk of fluid,-namely, to the forty or fifty ounces which constitute the diurnal discharge of urine. In the case of gout, we are seeking to make an impression on a much larger bulk of fluid,-namely, on the totality of the blood, lymph, and synovia,—a quantity in a man of average weight certainly not less than twenty pounds. Consequently, the effect of our dose must be proportionately less. Moreover, the urine is a dead excretion; it takes and keeps what is cast into it, and has no power of self-purification. The blood, on the other hand, is a living stream, with high powers of self-adjustment to a normal standard. A practicable dose of an alkaline carbonate enables us to alter the urine radically, to change its reaction from acid to alkaline, and thereby to exercise a decisive therapeutic effect in uricacid gravel. But the same dose only produces a feeble and transient effect on the mass of the blood and lymph; the blood passes off the surplus alkali with all speed through the kidneys into the urine, and quickly reattains its proper physiological standard of alkalescence.

The medicinal agents which have been chiefly employed in the treatment of gout, with a view of controlling the tendency to uratic precipitation, are the carbonates and phosphates of potassium and soda, the carbonate of lithia, piperazin, and the waters of mineral springs, and it is to these alone that attention is called.

Alkalies.—Alkaline substances are largely employed in the treatment of gout, both as pharmaceutical preparations and as components of mineral springs. It is believed that the alkaline carbonates and phosphates, administered internally, by increasing the alkalinity of the blood, enhance its solvent power on the material of gouty deposits, and thereby delay or prevent their formation. The experimental evidence laid before you entirely destroys this hypothesis. It has been conclusively proved that alkalescence, as such, has no influence

whatever on the solubility of sodium biurate. It has, moreover, been shown that the addition of an alkaline carbonate to blood-serum impregnated with uric acid produces no appreciable effect on the process of maturation and the advent of precipitation of the crystalline biurate in the medium. The use of alkalies in gout has been advocated on another ground. It is held in a vague sort of way, that there is an undue prevalence of acid in the gouty system, and that the blood is less alkaline than it should be. In some quarters it is even believed that this is the primary vice of the gouty state, and that there exists a so-called "acid dyscrasia," which dominates the whole condi-I have been at some pains to ascertain what foundation there is for this belief. Roberts has found very little of any kind, and none that is really valid. In the numerous examinations of the blood in gouty subjects made by Sir Alfred Garrod, the serum was invariably found to be alkaline, never acid, nor even neu-But he remarks that there is often (not always) a marked alteration in the degree of its alkalinity, and that in cases of chronic gout the serum sometimes shows a near approach to neutrality. It is, however, obvious that observations on the alkalinity of the blood have no validity in regard to the point under consideration unless they are made on cases of gout pure and simple. Gout is often complicated, not only with pyrexia, but with serious secondary lesions in the kidneys and joints, which lead to a profound cachexia. These secondary lesions bring with them blood-changes of their own, which are only remotely concerned with the primary disorder, and have no bearing on the etiology of uratic precipitation. In the last few years some exact quantitative measurements have been made of the alkalinity of the blood both in health and in disease. These researches indicate that a diminished alkalescence of the blood is a common pathological deviation, and that it occurs in a variety of conditions which have no special relation to gout, namely, in pyrexia, in diabetes, carcinoma, acute rheumatism, anæmia, leukæmia, and apparently in every kind of general cachexia. These facts and considerations suffice to show that, in the present state of our knowledge, the belief in an acid dyscrasia in gout rests on a pure presumption.

Carbonate of Lithia and Piperazin.—These two substances have been introduced into the treatment of gout expressly on chemical grounds. Solutions of these substances possess a high solvent power on free uric acid, and it has been inferred from this fact that their administration

internally might exercise a favoring influence on the solubility of sodium biurate in the bodily fluids, and thereby tend to prevent the formation of uratic depositions. This inference does not, however, appear to be justified. It has been found experimentally that the addition of carbonate of lithia or piperazin (in the proportion of .1 per cent. and .2 per cent.) to blood-serum or synovia had not the slightest effect in enhancing the solvent power of these media on sodium biurate, nor the slightest effect in retarding its precipitation from serum and synovia artificially impregnated with uric acid. If these bodies have any beneficial action in gout, it is certainly not due, as has been supposed, to their solvent action on the material of gouty concretions.

Mineral Springs.—The bearing on the inquiry on the use of mineral waters is of important practical interest. A considerable number of the springs to which gouty patients resort are strongly impregnated with the salts of soda. Now, it has been conclusively shown that all the salts of soda act adversely on the solubility of sodium biurate and hasten its precipitation, and it may be inferred that the introduction of these salts into the circulation must tend to favor the occurrence of uratic depositions in the body. It is not, therefore, surprising to learn that, not infrequently, the first effect of these waters on a gouty patient is either to provoke a downright attack of gout or to aggravate the symptoms under which he was suffering. This event is now recognized by the physicians practising at these Spas as a thing to be looked for, and experience has taught them the necessity of caution in regard to the quantity of the waters to be taken by new-comers. They comfort themselves and their patients, however, in the belief that this preliminary storm is a necessary prelude to the calm amendment which is to fol-There is no doubt some foundation for this idea. It is no fiction that a gouty man, tormented with symptoms of irregular gout, is relieved by a regular arthritic attack. Probably this arises from the complete, or approximately complete, precipitation of the urates floating in his blood and lymph into the structures of the joints. The urates are thereby as effectually removed from the vital fluids as if they were eliminated by the kidneys. But it must, we think, be allowed that this is a rough mode of cure, and that it brings with it serious pains and perils of its own. My impression is that gouty persons should either entirely avoid springs which owe their activity to sodium salts, or should use them very sparingly. It is difficult to believe that they can do any direct good, and easy to believe that they can do direct harm. If they do any good at all, it must be indirectly, by acting on the liver and the intestinal tract, and we possess other means of effecting this purpose without inducing any collateral risk.

There are, however, other springs of high and growing repute in the treatment of gout which are not open to these objections. These springs contain no soda, or only traces, and the sum of their mineral constituents does not exceed that which is often present in ordinary potable waters; they contain for their chief component a little carbonate or sulphate of lime, and it is doubtful whether the whole of this is absorbed into the blood; most of it probably passes out inertly with the fæces. In fact, springs of this class may practically be considered as equivalent to ordinary drinkingwater, except that several of them have the advantage of being thermal. Among the springs of this kind may be mentioned the waters of Buxton, Bath, and Strathpeffner; in Germany, the waters of Gastein, Wildbad, Pfeffers, and the Sauerling Spring at Carlsbad; in France. the waters of Aix-les-Bains, Contrexeville, Vittel, and Bareges. Now, there can be no reasonable doubt that the efficacy of these springs has nothing to do with their scanty mineral ingredients, but depends on their watery constituent. They are drunk freely and on an empty stomach. The action would be to dilute the blood temporarily and lower its percentage of urates and sodium salts. This effect would be to tend to retard or prevent uratic precipitation, and thus give the defective kidneys additional time to overtake their arrears in the task of eliminating uric acid.

It may be asked whether the drinking-water at home would not answer as well as resorting to a mineral spring. The inference from experiments is that, other things being equal, the beneficial results would be the same; but the "other things" never are equal. It would scarcely be practicable for a man going about his usual business to drink eight or ten tumblers of water on an empty stomach every day for two or three weeks. At a watering-place a patient has nothing to do except to attend to his "cure." Moreover, in getting away from home, he leaves behind him the worries of his daily life, and experiences the advantage of change of air and scene, with a salutary modification of diet, and he has abundant leisure for outdoor exercise. All these collateral influences help to raise the general level of health and quicken the action of the secretory cells. cannot forego the advantages of the timehonored practice of a visit to a mineral spring. At the same time, a word may be said in favor of a more systematic use of water in the every-day life of the gouty. Roberts has observed that some gouty persons are very sparing in their use of diluents; such persons should be encouraged to be habitually more liberal in this respect. In a few cases it might even be possible to imitate with plain water the regular two or three weeks' course at the Spa, and to repeat this course twice or thrice a year as a prophylactic measure.

It may be observed that in scarcely any complaint is there more need of caution in judging the effects of remedies than in gout. The incidents of the gouty diathesis exhibit a waviness—a flux and a reflux—which is highly characteristic. There is a natural tendency for the periods of aggravation to be followed by periods of amendment, and it requires a good deal of sobriety of mind to avoid being made the dupes of our own preconceptions.

Sir William Roberts believes the most promising road to an improved therapeutics of gout lies through a fuller and more accurate knowledge of the chemistry of uric acid and the urates, and a more penetrating study of the reactions of these compounds with the fluids and tissues of the body. This is a large and difficult field of inquiry, and demands the cooperation of many laborers.

AN INQUIRY INTO THE RELATIVE MERITS OF VAGINAL HYSTERECTOMY AND
HIGH AMPUTATION, OR PARTIAL
EXTIRPATION BY GALVANOCAUTERY IN CANCER OF
CERVIX UTERI.

BYRNE (Brooklyn Medical Journal, vol. vi., No. 11) presents the statistics of vaginal hysterectomy for the cure of cancer of the cervix uteri in a light far from favorable to the opera-Thus, quoting Pozzi's statistics, 311 hysterectomies performed by different authors gave 47 deaths, a mortality of about fifteen per cent.; or, taking the tables collected up to date, 044 operations performed by continental surgeons give 147 deaths, 14.5 per cent.; operations performed by British surgeons give a mortality of over twenty per cent.; 255 operations performed by American surgeons give 34 deaths, a mortality of over thirteen per cent.; the general mortality being about 14.6 per cent. A careful study as to the percentage of cure is exceedingly discouraging. Of 235 cases operated on, 63—that is, twenty-seven per cent. of the whole number-had an average immunity from relapse

of three years and four months. From a careful consideration of these figures and many others quoted from the original articles, Byrne believes that the ambiguous manner in which the tables of vaginal hysterectomy have been constructed is so misleading and in some instances so suggestive of erroneous inference as to render their compilers open to the charge of suppression of the truth or of actual misrepresentation. An operation known to be attended or followed by an average mortality of fourteen per cent. in the hands of the most experienced surgeons is a grave and dangerous one, and demands for itself a large percentage of permanent cures.

The frequency and rapidity with which recurrence takes place after vaginal hysterectomy for cancer, even when the disease has appeared to be limited and circumscribed, prove conclusively that it can lay no just claim to this essential feature.

The average period of life in cancer of the uterus, when not operated upon, is not less than two years, but often more, hence suffering has not been lessened but aggravated, and life has not been prolonged but shortened, in the vast majority of all cases thus far subjected to vaginal hysterectomy.

In twenty-eight cases of vaginal hysterectomy for cancer of the fundus at the Berlin Clinic, no less than seven died from recurrence within twelve months; therefore the regional grounds on which some have conceded to this operation even a limited field are inconsistent with facts, and therefore not tenable.

The operation is, in many respects, more dangerous than the disease for which it is undertaken, and the majority of all patients afflicted with uterine cancer would live longer without than with it.

On several occasions during the past twenty years ample and convincing proof, clinical and statistical, was presented as to the claims and unique characteristics of the electric cautery in the treatment of uterine cancer, and further observation has been more than confirmatory of opinions then advanced.

Amputation of a cancerous cervix by the cautery-knife is free from danger, a safeguard against all infection, traumatic or septic, and, what is of still greater importance, it is destructive to latent cancerous proliferation in tissues far beyond the line of incision, hence much more is comprised in the operation than the mere removal of a part or parts more actively involved in the work of destruction.

Any method of operating for which advantages so vital and so far-reaching can be claimed and established, and which thus distinguish it

from all others, renders its adoption on the part of those who undertake to operate for cancer of the uterus no less than a moral obligation.

In forty out of sixty-three cases of cancer of the portio vaginalis, twenty-three having strayed away, the period of exemption ranged from two to twenty-two years, being an average for each one of over nine years. Of eighty-one cases involving the entire cervix, thirty-one were lost sight of, ten relapsed within two years, five had no recurrence for two years, eleven for three years, six for four years, eight for five years, six for seven years, two for eleven years, one for thirteen years, and one for seventeen years. So of forty of this class, whose histories could be followed up, there was an average period of exemption for each of nearly six years.

Byrne's method of operating is as follows: In cases where the entire cervix has been destroyed, and the corpus uteri as well as the parametric tissues are found to be involved, all softened and broken-down tissue is first removed by the free use of a sharp curette; the cavity is then sponged repeatedly with glycerin-carbolic lotion, is packed with absorbent cotton, which is allowed to remain for a few minutes, or longer if necessary. If on removing this cotton bleeding has ceased, and the cavity is fairly dry, cauterization may be proceeded with. If, however, oozing of blood to any extent still continues, a properly-rolled tampon saturated with the glycerin-carbolic lotion should be packed in and allowed to remain for forty-eight hours before application of the cautery. When the surgeon is prepared to operate, the diseased organ should be exposed to view and the vagina protected by a Sims speculum and an anterior and two lateral retractors. It may be necessary to seize the edges of the excavation by one or more volsella. Before introducing the cautery electrode a wad of absorbent cotton is to be passed into the cavity, held for a moment, and immediately on being withdrawn, the dome-shaped instrument, brought to a cherry-red heat, is rapidly and repeatedly passed over the bottom of the cavity. The latter is then to be again dried by wads of absorbent cotton held in dressing-forceps, and cauterization resumed as in the first instance. This process is to be repeated over and over again, until the deeper parts of the cavity have become dry and charred, when the sides are to be treated in precisely the same manner, and roasted to the same crisp condition. of the operation will now present the appearance of a perfectly black and dry cavity. All ragged and overlapping edges are next to be trimmed off by the cautery-knife, a firmly-rolled

tampon of suitable size, with thread attached, and saturated in the glycerin-carbolic lotion, is placed in the cavity, and, finally, a supporting vaginal tampon is applied and the patient returned to bed. The vaginal tampon may be removed on the following day, but the deeper packing should be allowed to remain for forty-eight hours or longer. The subsequent treatment should consist of vaginal douches of carbolized water repeated twice daily.

In conditions admitting of high amputation the following is the method usually resorted to: The uterus is exposed and the vaginal walls protected in the manner already described; a diverging volsellum, being passed well into the cervical canal, should be expanded to a proper degree and locked, so as to afford complete control of the uterus during the entire operation.

By alternate traction and upward pressure of the uterus, an accurate idea may be obtained as to the proper point to begin the circular incision, so as to avoid injuring the bladder or opening into the cul-de-sac of Douglas. As to the latter, however, should it be found that the disease has involved the retro-uterine tissues. and that its excision or destruction by the cautery cannot be effected without opening into the peritoneal cavity, there need be no hesitancy in doing so. Should it be evident at the outset that the operation—in order to be thorough must include a portion of the cul-de-sac, it will be better to make the line of incision anterior to this until the cervix has been removed, and leave the excision of the retro-uterine parts by the cautery-knife to be the final proceeding. Under these circumstances all that will be needed will be an antiseptic tampon properly applied.

In proceeding to make the circular incision a cold, slightly-curved cautery-knife should be applied close up to the vaginal junction, and from the moment that the current is turned on should be kept in contact with the parts being incised. Before removing the electrode for any purpose, such as change of position or altering the curve of the knife, the current should first be stopped, and the instrument again placed in position while cool before resuming incision. If the knife, though heated only to a dull red, be applied to parts at all vascular, hemorrhage will certainly follow.

This is a very important point, and should never be lost sight of in all cautery operations.

The circular incision having been made to the depth say of a quarter of an inch, it will now be observed that by increased traction the uterus may be drawn much farther downward,

and by directing the knife upward and inward the amputation may be carried to any desired extent. In cases calling for amputation above the os internum, it will be better to excise and remove the cervix first; then, by dilating the upper canal sufficient to admit the diverging volsellum, once more proceed as in the first instance, taking care, however, to keep within bounds. It will be found that the cupped stump can now be drawn down and made to project as a more or less convex body.

In all cases the dome-shaped electrode should be passed over the entire cavity repeatedly, so as to render the cauterization still more complete.

It is important to add that, in carrying the knife towards the sides of the cervix, circular and other arterial branches are apt to be encountered, and hence, in this locality particularly, a high degree of heat in the platinum blade is to be carefully avoided. As an additional security against hemorrhage, the convexity of the knife should be pressed against the external surface of each particular section cut, so as to close vessels more effectually.

The metallic parts of the electrode for the distance of about two inches should be covered with a strip of thin flannel, so that the vagina may be protected from injury through the reflected heat.

# THE MYDRIATICS IN OPHTHALMOLOGY.

S. D. RISLEY (University Medical Magazine, January, 1893) calls attention to the mydriatics and their employment in ophthalmic practice. From this paper the following abstracts are selected:

The groups of alkaloids differ more or less widely in their physiological properties, although obtained from a common source. The method employed for extraction determines, in large measure, the nature of the product. The alkaloid derived from Atropa belladonna will be atropine if extracted in the presence of an alkali, whereas, without this, the product will be hyoscyamine. The only means by which the chemist is able to differentiate the product is by the fact that hyoscyamine has the property of rotating a beam of light to the left, while atropine possesses no polarizing power, and chemically they are isomeric, having a common formula. As found in the markets, the alkaloids may be placed in two classes, the first of which would include those with a simple homogeneous base, and having the formula C, H, NO. To this class belong atropine, crystalline hyoscyamine, and hyoscine. In the second class are included those having mixed bases, comprising the simple alkaloids of the first class, as they are found mixed in the plants of the natural order of the Solanaceæ,—viz., the Atropa belladonna, Duboisia myoporoides, Datura stramonium, Scopolio japonica, etc. To this class belong the commercial daturine, duboisine, amorphous hyoscyamine, and scopolein. As therapeutic agents, it is important to be careful to secure an isolated product, as represented in the crystalline salts, in contradistinction to the mixed bases, as represented in the amorphous commercial product. Much confusion regarding their physiological properties and relative therapeutic value has grown out of the employment of these mixed bases.

When it is desired simply to dilate the pupil for examination, cocaine or homatropine is preferred. In the treatment of inflammatory conditions of the cornea, especially in phlyctenular keratitis, atropine, four grains to the ounce, is recommended, the instillations to be pushed until full dilatation of the pupil is secured. In the treatment of acute iritis, atropine is advised in conjunction with other measures,—for example, local bloodletting, the use of mercurials, etc. The fact that a two-per-cent. solution of cocaine increases the mydriatic effect of atropine is referred to, but the danger that cocaine may disturb the nutrition of the cornea is clearly pointed out, as is also that a case of iritis may be mistaken for one of glaucoma.

In regard to the employment of mydriatics during and after middle life, Dr. Risley writes as follows: "There is a wide-spread opposition to their employment after the age of forty, since it is during the middle period of life that glaucoma usually occurs. I am sure that the fears upon which the opposition is based are not well founded, if due caution is exercised on the lines I have already pointed out. It is quite as important between forty and fifty years of age to use these drugs for the satisfactory correction of many eyes as before this period of life. The cases of retino-choroidal irritation, and accommodation cramp with tonic contraction of the iris and ciliary muscle, are quite as frequent as before the age of forty, and the therapeutic value of the mydriatics is just as marked. A wide experience fully justifies this statement. I have used these drugs with impunity, both in private and public practice, in many thousands of eyes, after the time of life specified. If harm comes from them, it is because a sufficiently careful study of the case has not preceded their use. I have yet to meet the first instance of an acute glaucoma precipitated by the employment of a mydriatic, but I have always exercised the caution which

I have pointed out and again emphasize as the duty of every person essaying their use."

In regard to the headaches of old people, as well as the necessity of mydriatics in young eyes, Dr. Risley believes as follows: "The headache of old people is very frequently due to the eye-strain brought about by the use of too weak glasses, or from the neglect of astigmatic corrections. It is true they have lost the power of adjustment through the hardening of the lenses, but they have not lost the ciliary muscle, and the fruitless strain to see with an improper glass is quite as painful and often as harmful to the eyes as earlier in life. It is in these cases you will find the solutions of homatropine of signal service. It should be used in from 4- to 8-grain solution three times daily until the ocular irritation subsides, and then the proper glasses chosen.

"It is in young eyes, however, that the use of these drugs is most frequently needed. wish to impress upon you, however, that they are not to be employed for the sole purpose of paralyzing the power of accommodation. This is of great importance, and in most cases a necessity, if you are not to be satisfied with more or less close approximations in ordering the correcting glasses. My purpose has always been to determine with the greatest possible accuracy the static refraction of each eve. Having ascertained this, it may be used in any way the judgment of the surgeon may dictate, but until this action has been gained all subsequent action must be based upon unknown factors, and this knowledge cannot be had except through measurements made after thorough paralysis of the accommodation.

"You will not use these drugs for this alone, however. A very large percentage of refraction cases suffer from irritation and pathological changes in the intraoculur tunics, the result of neglected eye-strain. The woolly choroid, hyperæmic retina, and optic disk you will find to rapidly disappear under the sedative and restful influence of the mydriatics. I am sure you will soon learn to prize them for their therapeutic value as well as for the paralysis of the ciliary muscle.

"The method of their employment and the member of the group you select will depend in large measure upon the condition of the eyes in any particular case. In eyes which are nearly or quite free from retino-choroidal irritation, homatropine hydrobromate will prove sufficient and the most desirable agent to employ. The property which most commends it, in comparison with the other members of the group,—viz., its evanescent control over the

power of accommodation,-makes it necessary to keep your patient at hand, so that the determination of the refraction can be made before the subsidence of its effect. I employ an 8-grain solution of the drug, instilling one or two drops in each eye every fifteen minutes for an hour or more, and often associate its use with a four-per-cent. solution of cocaine. They are not used at the same moment, however, since the cocaine solutions cause much temporary irritation. After the smarting has subsided the homatropine is instilled. many cases you will be able to save your patients much time and annoyance by this method, since in from twenty-four to thirty-six hours its influence over the pupil and accommodation will have disappeared. It may also be selected in cases where retino-choroidal irritation is present, but must then be used for many days, or long enough to secure the needed rest and therapeutic effects already noticed. When employed for this purpose, it should be used at home, 1 or 2 drops being instilled in each eye four times daily. When used in this way, however, it proves of but little, if any, advantage in point of time over duboisine or hyoscyamine, since what is lost by the longer time required to recover from these drugs is gained by the shorter period required to accomplish the result wished for. All things considered, I prefer the hyoscyamine to either of the other mydriatics in the average case of asthenopia, and employ habitually a 2-grain fluidounce solution, I drop in each eye three times daily. It has the advantage of being less liable to cause constitutional symptoms than a 4-grain solution of atropine or a 2-grain solution of duboisine. Furthermore, the accommodation is recovered several days sooner than when atropine is employed, the average duration of the paralysis with hyoscyamine being seven or eight days, while that of atropine is from ten to fifteen days. In order to secure this result, however, you must be sure that the preparation used is hyoscyamine."

# THE RELATION OF CONVERGENCE TO ACCOMMODATION, AND ITS PRACTICAL BEARING.

ARCHIBALD STANLEY PERCIVAL (Ophthalmic Review, November, 1892) comes to the following conclusions:

r. The correction of refractive errors, if of high degree, causes a profound alteration in the relative activities of the nervous centres for convergence and accommodation. Most individuals have a remarkable power of adapting themselves to the new conditions caused by such correction, and for them prismatic combinations are necessary.

- 2. For those individuals who cannot so adapt themselves to the correction, relief will often be given even by weak prisms that diminish the strain.
- 3. That the relative, not the absolute, convergence is the basis on which to found a principle of treatment.
- 4. That the "area of comfort" is roughly represented by the middle third of the relative convergence range, and that practically we need only concern ourselves with that which has to do with the vision of objects at and beyond the distance of one-third metre.
- 5. That the glass-rod test is to be regarded as a rough qualitative test, but it is not a reliable indication of the strength of prism that is required to give relief in these cases.

If complete charts were plotted out in all cases of muscular asthenopia they would throw much light on this difficult subject, but the time and patience demanded in working them out with neurotic subjects debar their general adoption. I think the following tests will in most cases be sufficient, and even these points, if accurately determined, will probably tax the patience of both examiner and examinee:

- 1. Correct all errors of refraction, and determine the relative range of convergence for o accommodation by means of abducting and adducting prisms, the test-object being at a distance of at least six metres. The revolving prism of Lucas Crétes is exceedingly convenient for this purpose.
- 2. Repeat the test with the test-object at one-third metre. This will give the dimensions of the range on either side of the point corresponding to 3 D of accommodation and 3 ma. of convergence.
- 3. Find the absolute maximum of convergence in order to determine if the range is much contracted. An accurate determination of the near point of convergence (Pc) is, fortunately, usually unnecessary.

In all cases when prisms and lenses are used together, the effect of the combination should be calculated or determined from the tables already published. (*Ophthalmic Review*, vol. x. p. 299.)

## ENUCLEATION IN PANOPHTHALMITIS.

DR. F. LAGRANGE (Journal de Médecine de Bordeaux, November 27, 1892), after quoting a number of cases of enucleation for panophthalmitis, gives it as his opinion that this operation is always indicated under these circum-

stances. He refers, however, to the fact that Graefe, of Halle, holds a contrary opinion, and that this opinion is shared by many other eminent surgeons. At the Ophthalmological Congress of 1889 the question for the day gave rise to a discussion, which is thus summarized:

Ophthalmologists are divided into two camps. Some consider enucleation a serious, difficult, and dangerous operation, capable of occasioning in itself a fatal termination. The others, on the contrary, have immediate recourse to it whenever the suppurated eye threatens the orbits and the organism. If death occurs from panophthalmitis, the supporters of the first opinion believe it is always after enucleation. Graefe has cited examples of this, and Kalt has lately called attention to new facts supporting the same belief. But in these operations is the death to be imputed to the operation or to the affection? Graefe's operations have the serious fault of being prior to the Listerian period. Nothing proves, moreover, that in all of these cases the propagation to the meninges did not exist before the operation. Panas has published very full operations. In twenty-five years of hospital practice, this author, a great champion of enucleation in panophthalmitis, has only twice seen death follow the operation. The first case was that of a soldier who had received a splinter of shell in the left ocular superciliary region, and the only explanation of the fatal termination was serious traumatism. In another case of enucleation under these circumstances, the autopsy showed that death occurred from nephritis. In the session of the Ophthalmological Congress, Motass quoted two cases of mortal meningitis after phlegmon of the eye without surgical interference. Undoubtedly these cases would be frequent if removal of eyes afflicted with panophthalmitis was not regularly practised, not only by the majority of specialists, but also by all surgeons. When the pus and pyogenic elements have not passed the ocular coats, the complete removal of the organ, followed by a thorough antiseptic toilet of the orbit, is the proper procedure. The only contraindication of enucleation is some fault in the patient's general condition. All ophthalmologists clearly recognize the necessity of expelling the pus, but those who are afraid to enucleate propose to suppress suppuration by means which were considered as efficacious as enucleation and more convenient. of Brussels, recommends exenteration; Truc, of Montpellier, evacuation; Cribret, removal of the suppurating vitreous body. The last two methods, while sacrificing neither the choroid nor the uveal tract, leave a large number of infectious agents in the eye which must be the cause of danger. Exenteration, supported by Coppez, is more acceptable, but exenteration in the most favorable cases provokes inflammatory conditions and recovery is apt to be slow. The author closes his argument, which has been based upon his personal observation and statistical information, with the repeated assertion that enucleation is an effectual operation and is always indicated in panophthalmitis, provided the patient's general condition permits operative interference.

THE VALUE OF JAVAL'S OPHTHALMOM-ETER FOR THE CORRECTION OF ASTIGMATISM WHERE MARKED AMBLYOPIA IS PRESENT.

A. Britton Daynard (Post-Graduate, December, 1892) urges the importance of determining the corneal astigmatism with Javal's ophthalmometer in all cases where marked amblyopia is present. He quotes a number of illustrative cases in which the corneal astigmatism was carefully measured with this instrument, and suitable sphero-cylindrical combinations ordered, resulting in some improvement in vision, as well as satisfaction in the relief of the accompanying asthenopia.

## GLAUCOMA AND ITS TREATMENT.

In a lecture on glaucoma, Mr. Henry Juler (*Clinical Journal*, December 21, 1892) thus summarizes his views in regard to treatment:

With regard to treatment, the only effectual manner of reducing abnormal increase of tension is by operative procedure. It is true that certain myotic drugs, as sulphate of eserine and pilocarpine, when instilled into the palpebral sac, have the effect of reducing increased tension, and the use of eserine drops (2 grains to 1 ounce) is a most valuable aid to us in producing temporary relief in all cases, be they acute, subacute, or chronic. Unfortunately, however, their use can only be tolerated to a certain limited extent by the conjunctiva; the use of eserine soon sets up conjunctivitis, and must be discontinued at frequent intervals, during which the tension again increases. Besides this, it appears to lose its effect after prolonged use. We may, therefore, use either eserine or pilocarpine, combined with cocaine, in any case where it is desirable to postpone operative measures; but given a case of established glaucoma, the sooner its tension is relieved by operation the better. The only efficient operation is a large upward iridectomy.

In acute cases the operation should be performed with as little delay as possible, for an eye in a state of acute glaucoma may be compared to a strangulated hernia, and, unless its tension is immediately relieved, the patient will become stone blind in the course of from twenty-four to forty-eight hours. As soon, therefore, as the case is recognized, all possible effort should be made to relieve tension and allay inflammation. Iridectomy should, if possible, be immediately performed; but if its postponement for some hours is unavoidable, the drops of eserine and cocaine should be instilled every hour, leeches applied to the temple, hot fomentations used, and the prima via cleared by suitable aperients. Should such a case be seen late in its course,-say after two or three days' duration,—it may be a question whether vision is not entirely lost in the affected eye or eyes, but so long as any perception of light is found to exist, operation is always justifiable, and may be followed by excellent results, not only in the relief of pain, but in the recovery of useful sight. In subacute cases the same lines of treatment are indicated, although the necessity for immediate operation is not so great.

In chronic cases there is less urgency for operation; eserine can be used for a time, and the case carefully kept under observation. Here, again, the previous duration of tension and the state of the vision require to be carefully considered before the operation is decided upon. The less the contraction of the visual field, and the slower the progress of the disease, the more effectual the operation is likely to prove, and vice versa. Indeed, where contraction of the visual field is so great as to have passed its centre, it is a question whether the case had not better be left to nature rather than interfere with it. After prolonged tension in an eye the tissues appear to be universally weakened, and therefore to tolerate operation rather badly.

# THE PROPHYLACTIC TREATMENT OF OPHTHALMIA NEONATORUM.

BUDIN (Journal de Médecine de Bordeaux, No. 43, p. 481, 1892) communicates to the Obstetric Society of Bordeaux the prophylactic treatment of purulent ophthalmia of new-born infants, which he uses in his practice at the Charité Hospital in Paris. It consists in the instillation into the eye of I drop of an aqueous

solution of nitrate of silver, I to 150. From the 7th of October, 1891, to the 12th of July, 1892, he used this method in six hundred and seventy-five cases. Only one had ophthalmia of the membranous form, which was a child born before term, and two others had a slight conjunctivitis. The author remarks, however, that very minute care is taken in the aseptic treatment of the mother. It is a condition essential to success, and in his opinion explains that weak solutions of nitrate of silver are sufficient to prevent ophthalmia, and he objects to the concentrated solution of Créde, and has observed cases in which ocular accidents were due to the action of this solution.

M. Rivière uses a .25-per-cent. solution of nitrate of silver as a prophylactic instillation. He remarks that all purulent ophthalmias are not contracted by children during their passage through the genital canal, but that in all cases of maternity there are other post-natal causes of contagion.

Audebert employs a solution of one per cent., and has never experienced accidents the result of its caustic action.

Chaleire has seen lotions of naphthol used successfully as a prophylactic measure. He thinks that genital disinfection, however, is not enough in itself, and that instillations of nitrate of silver of one-per-cent. strength must be added, and advises their application as soon as possible after birth.

Piéchand reports a case which, although he himself made a quick instillation of nitrate of silver (1 to 50), purulent ophthalmia resulted.

—Abstract Revue Générale d'Ophthalmologie, November, 1892.

# AN UNUSUAL EFFECT OF JEQUIRITY IN CHRONIC TRACHOMA.

Dr. R. C. Hodges (Ophthalmic Record, December, 1892) contributes two instructive cases of trachoma and pannus, in one of which jequirity infusion (1 to 3 of water) was freely rubbed into the conjunctiva. No distinct reaction took place at the end of twenty-four hours, except some slight irritation of the conjunctiva. For seven weeks the infusion was dropped into the eyes each day, bringing marked improvement in the condition until the conjunctiva became smooth and normal, the cornea clear, and vision greatly improved. In the second case precisely the same treatment was employed with happy results. In a third case, without corneal complication, this method failed to bring about results that were useful, and iodide of silver was substituted, with the result of rapid improvement. He cites these cases to call attention to the fact that jequirity was used in one case seven weeks daily, in another six weeks, and in a third three weeks, and at no time was there any inflammatory reaction more severe than a simple acute catarrhal conjunctivitis. The good effect in two cases has already been described. Hodges concludes that the curative effect of jequirity is due to some principle not yet recognized and isolated, and not to the destructive action of the violent inflammation which it excites.

# SEVERE BURN OF THE CONJUNCTIVA BY THE INSTILLATION OF CALOMEL WHILE GIVING POTASSIUM IODIDE INTERNALLY.

DR. J. T. CARPENTER, JR. (Philadelphia Polyclinic, January, 1893) calls attention to the fact that the introduction of calomel into the conjunctival cul-de-sac is contraindicated if the patient is at the same time taking internally potassium iodide, or, indeed, any of the preparations of iodine, and reports two cases in which serious burns of the conjunctiva followed this practice. Although mention of this matter has been very frequently made, Carpenter desires to emphasize it still further by his report. The iodide is excreted by means of the tears, and when calomel comes in contact with it in the conjunctival sac, biniodide of mercury is formed, which is a severe caustic. He cautions against the use of calomel until proper inquiry has been made in regard to the internal medication.

## INTRAOCULAR INJECTION OF ANTI-SEPTIC SOLUTIONS.

At the meeting of the Ophthalmological Society of the United Kingdom, November 10, 1892, reported in the *Ophthalmic Review*, December, 1892, occurs the following abstract:

BERRY gave an account of some facts elicited during some experiments on rabbits, undertaken by his assistant, Dr. Chassaud, with the object of ascertaining the effect of different solutions injected into the vitreous. In some cases, before injecting the antiseptic, the vitreous was inoculated with fresh, septic pus. The only substance injected after inoculation which seemed capable of preventing purulent hyalitis was chlorine-water. At the same time this injection was much better tolerated by the retina and vitreous than any other strong antiseptic fluid. In two cases of purulent hyalitis in men, chlorine-water injected into the vitreous led to

immediate improvement and the eyes were saved, although sight had been lost before treatment was adopted.

DR. HILL GRIFFITH suggested that trichloride of iodine promised to be very suitable for intraocular injection. It was said to be non-irritating, and to become decomposed in the tissues in the free chlorine and iodine.

MR. HARTRIDGE thought that cases frequently occurred in which the injection of antiseptic and germicidal solutions into the eye seemed most desirable, and if it were shown that this treatment could be safely adopted, eyes might be saved which now had to be removed.

Mr. Downe referred to one case in which he had injected boric acid into the anterior chamber, and in which arrest of suppuration had resulted.

Berry thought it probable that in the use of intraocular injections a distinct advance in ocular therapeusis might be made. He pointed out that injections into the anterior chamber and into the vitreous could scarcely be compared. He had frequently used solutions of perchloride of mercury to wash out the aqueous chamber, but usually with resulting opacity of the cornea. This opacity he had noticed to occur less markedly in children than in adults.

## INTRAOCULAR ABSORPTION OF IODO-FORM.

BERRY (Ophthalmic Review, December, 1892) records a case in which, after extraction of senile cataract, he applied iodoform freely to the wound. On examining the eye next day, the anterior chamber was found to be filled to the extent of apparently two-fifths of its capacity with iodoform, and the rest of the aqueous to be turbid. In some parts caked portions of iodoform could be seen plastered upon the The iodoform was gradually absorbed without causing any great irritation. In a fortnight no trace of it could be seen, and the result of the operation was good. Although he had very frequently applied iodoform after removal of cataract, he had never known it to penetrate the anterior chamber.

# SUBCONJUNCTIVAL APPLICATION OF COCAINE IN EYE-OPERATIONS.

KARL KOLLER (New York Medical Journal, January 7, 1893), for the purpose of rendering squint-operations painless, proceeds as follows: After having rendered the conjunctiva anæsthetic by a four-per-cent. solution of cocaine

he inserts the speculum, and by means of a mouse-toothed forceps seizes a fold of the conjunctiva over the tendon to be operated upon. The needle of a hypodermic syringe is inserted through this fold into the conjunctival tissue as deeply as possible, and a few drops of a twoper-cent. solution of cocaine are injected. This strength is preferred to a four- or fiveper-cent, solution. He considers two-thirds of a grain as the utmost limit for adults that can safely be applied as an injection, if the locality of the injection is on the head, while on the limbs double the amount may be allowed. After the injection the speculum is removed from the eye, and the eye closed so that the artificial ædema of the conjunctiva is given time to disappear, which it does in about five Under these circumstances, Koller states that an operation, either tenotomy or advancement, can be performed without the slightest pain. In cataract extraction and iridectomy he proceeds as follows: First a few drops of a four-per-cent. solution of cocaine are dropped into the conjunctival cul-de-sac; then the speculum is inserted, and with a sterilized hypodermic syringe a few drops of a two-per-cent. solution of cocaine are injected under the conjunctiva next to that part of the cornea where the section is to be made. A solution has been previously sterilized by boiling it, and the hypodermic syringe by rinsing with alcohol and then with a two-per-cent. carbolic acid solution. After the injection the speculum is removed, and it is necessary to wait five or ten minutes for the artificial ædema to subside. The anæsthesia is complete, and Koller believes it will tend to diminish the percentage of prolapse of the iris.

# THE TREATMENT OF RECTAL CANCER BY EXCISION.

H. CRIPPS (British Medical Journal, December 10, 1892) states that there is practically only one form of rectal cancer,—namely, adenoid carcinoma; , yet, by the bedside, growths have very different clinical features. The length of time that the disease has been in progress accounts for some of this difference, but it is by no means the only factor. In some cases the growth may have been present for many months, or even a year or two, yet only have affected the bowel in a comparatively superficial manner, it having chiefly crept along the mucous and submucous coats without completely perforating the muscular layers. In other cases, even from the first, the cancer extends more rapidly in the deeper parts than on the surface, quickly invading and perforating the muscular coats, and then spreading widely into the neighboring tissues. It thus becomes bound to the sacrum behind, the bladder, prostate, or uterus in front, and it is especially apt to invade the peritoneum of Douglas's pouch.

So long as the disease has not perforated the muscular coats, the prospects of an operation are hopeful. It means that the cancerous affection may still be confined to the rectum, and that, by the removal of the whole or a portion of that organ, it may possibly be eradicated. On the other hand, when it has once extended beyond the bowel, the prognosis becomes most unfavor-It is true that surgically the rectum can be dissected out from the neighboring organs, and surrounding indurated portions of tissue can be subsequently picked out, but the result is generally very disappointing, a recurrence taking place before the wound is completely There is one part, however, where the extension of the disease through the coats of the bowel is of comparative unimportance,that is, when the recto-vaginal septum is implicated. Cripps has had two excellent cases of permanent recovery after removing a considerable portion of involved septum.

Before expressing an opinion as to the desirability of an operation in any particular case, and even before examining the local conditions, the possibility of distal dissemination must be considered. Implication of the lumbar glands and liver does not usually take place till late in rectal cancer; but it must be remembered that occasionally the liver becomes infected while the local disease is comparatively insignificant. The younger the patient the earlier appears the infection of internal organs, and Cripps knows of cases where malignant disease of the liver was well marked before any suspicion had been aroused as to cancer of the bowel. If the liver is to any extent involved, its nodular condition can be detected by palpation, while in other cases the emaciated and cachectic appearance of the patient -considerably in excess of what the local disease would explain—justifies the inference that the internal organs have already become cancerous.

Should there be no evidence of general infection, the local state of affairs next comes under consideration. In the majority of cases a full and efficient examination can be made without the aid of an anæsthetic; but in doubtful cases the value of examining a patient under ether cannot be exaggerated. Disease, which appears at an ordinary examination too firmly

adherent for removal, after the muscles have been relaxed by ether may be found to be quite suitable for operation.

The speculum is of no practical value in examining rectal cancer, being far less reliable than the educated finger. The rigidity, the extent, and the hardness of the surrounding tissues are the essential features in determining the question of operation, and these can be ascertained by touch alone.

On passing the finger into the bowel there is generally a healthy interval of mucous membrane between the anus and the lower border of the disease. Usually this border is about a couple of inches from the anus. The disease may extend all round the bowel, or it may only affect a portion of its calibre. The length of the gut involved, too, is very various; sometimes it is a mere patch or ring, not more than half an inch in length, or it may be implicated for several inches.

The conditions met with which make a case unfavorable for removal are as follows: The bowel at the diseased portion is generally strictured, and difficulty may be experienced in finding the opening into it. This is caused by the straining and pressure from above invaginating the diseased area into the gut below. If this has occurred, a rough nodulated tumor can be felt, not unlike a cervix uteri. Around this is a cul-de-sac of greater or less depth, the real entrance to the bowel being through the centre of the prolapsed mass. It is very necessary to remember this tendency of the disease to become intussuscepted. author has often seen cases where the cancer was supposed to be confined either to the anterior or posterior wall, for the finger, on examination, had passed into this cul-de-sac, in the belief that it was the channel of the bowel, and gave the idea of the growth being either in front or behind, instead of, as in reality, surrounding the bowel; and it must be further borne in mind that in these cases the site of disease is much higher than it appears, and Douglas's pouch is often drawn down in the prolapse. This prolapse is present in about one-third of the cases.

The surface of the growth is nodular and hard to the touch, but bits can easily be broken off with the finger-nail, and bleeding is quickly produced. If the finger be pressed against the mass, or if the tip can be insinuated into the orifice of the stricture, the whole feels rigid. The growth cannot be pushed upward, nor can it, save to a very limited extent, be moved from side to side. This rigidity is caused by the extension of the growth beyond

the walls of the rectum. Such cases are quite unsuitable for excision.

As opposed to the kind of case just described, the disease may be found limited to a portion of the bowel, the whole circumference not being involved, or, if it is so, there is no tight stricture, the part being merely narrowed, so that the finger can be passed through it without using any force. The surface of the growth feels like an ulcer with a rough, raised, indurated base. The border feels hard, and is tucked over so as slightly to overlap the surrounding healthy membrane. The finger, particularly if the examination be made under an anæsthetic, is able to pass beyond the upper border of the growth. The bowel in the neighborhood of the disease admits of considerable mobility on the neighboring parts, and this is not merely noticed from side to side, but also from above downward. Of course this mobility is not so free as in health, but is sufficient to convey to the surgeon the idea that the rectum can be dissected from the surrounding tissue without much trouble. This is the class of case, including the laminar form of growth, which is very suitable for removal, and often gives most satisfactory results. It will be found, from practical experience, that the greater proportion of rectal cancers will fall decidedly into one of the foregoing categories, but occasionally cases will be met with which cannot be definitely placed in either, and here the propriety of operating must depend on the surrounding circumstances; but seeing that, if left, death must be the inevitable consequence, operation should be determined upon.

Of four hundred cases of rectal cancer seen during the last fifteen years, for various reasons, Cripps advised about half of these against operative treatment, either by excision or colotomy. In the remainder of the cases operative interference was more or less strongly urged. In many the advice was not followed, the patient preferring treatment by electricity or other quack remedies. There remained, however, one hundred and fourteen cases in which he operated for rectal cancer,—thirty-eight by excision, seventy-six by colotomy.

In the list of the thirty-eight excisions, the ultimate termination of such cases as he could trace is as follows: Three died, thirty-five recovered, giving a mortality of a little less than eight per cent.

Of the twenty-eight cases whose subsequent history can be traced, in fifteen recurrence is known to have taken place, while in twelve no recurrence has occurred. In seven of these over three years has elapsed; so that, accord ing to the method adopted by Mr. Butlin and others, these cases may be considered as

# OPERATION FOR THE REMOVAL OF SUB-MAXILLARY CANCER.

OGSTON (British Medical Journal, December 3, 1892) describes a special method of operating on submaxillary cancer, which he recommends from its easy performance and because of a large percentage of permanent cures which have resulted from its adoption.

He states that cancer of the tongue or lips, if laterally situated, usually spreads to the absorbent gland that lies in the submaxillary region, embedded in the submaxillary salivary gland, about an inch and a quarter in front of the angle of the jaw. In this situation recurrence of cancer is also usual after it has been removed by operation from the lips or tongue. (Central cancer of the lip generally extends to, or recurs in, the sublingual glands, just behind the symphysis of the jaw.) The appearance of the disease in the submaxillary region shows itself by a fulness, due to an egg-shaped tumor, increasing in size from that of a small hazel-nut to that of a plum. It is at first movable, and its mobility and shape can best be made out by the surgeon putting the thumb of his hand which belongs to the opposite side from the disease down into the floor of the patient's mouth between tongue and jaw, and the fingers of that hand externally over the submaxillary region, when, by this double palpation, the condition can be accurately made out.

As the disease progresses the gland enlarges in all directions, but chiefly upward towards the base of the jaw, which it approaches so closely that by the time it has reached the size of a large cherry it is so intimately connected with the jaw that, though it may be movable upon it, it cannot be completely removed by operation unless a piece of the jaw be taken The gland speedily becomes adherent, and the disease then invades the jaw, eroding and extending into it, and this may occur even where independent mobility of the two structures seems present to a certain degree. progress of the disease in the gland is not a very rapid one, and the mischief remains for many months isolated there, presenting, if properly dealt with, a condition favorable to a complete removal and permanent cure. Eventually, however, it extends backward, and appears next in the glands over the carotid, just in front of the sterno-mastoid, and vertically below the angle of the jaw. When it reaches this situation operation is very seldom successful in permanently curing.

The following is the method of operation:

After completing the ordinary preliminaries, an assistant, standing behind the patient and fixing his head, compresses the facial artery in the usual manner against the base of the jaw. The operator carries an incision downward from the angle of the mouth to the base of the iaw, dividing all the soft parts down to the bone. This incision lies anterior to the diseased gland. From its lower extremity a second incision is carried backward to the angle of the jaw, parallel to and just above its base, dividing again all the soft parts, including the facial artery, down to the bone. This incision lies above the disease. The thumb or forefinger of the operator's left hand is now placed in the mouth, and lifts the soft parts of the cheeks outward, while the scalpel, carried close to the jaw, severs them from the bone as far back as its angle, so as to leave the outer surface of its body bare.

In the somewhat rare event of the disease having originated on the inner surface of the cheek, it can at this stage be freely dissected off the inner surface of this cheek-flap. The arteries are then tied or secured by forceps.

Exploration between the thumb inside and the index-finger below the jaw now enables the operator to gauge the extent of the disease and the distance to which its connection with the jaw extends backward and forward. sponding with this, incision is now made completely through the jaw well in front of the disease by an amputation saw, which works better and more quickly than any other. incision is usually vertical, and falls about the situation of the first or second bicuspid, which may be extracted before the saw is applied. The incision may sometimes be advantageously directed somewhat obliquely downward and forward, so as to save more of the alveolar edge, and the teeth, if present, may be extracted from its line. It is not, however, absolutely necessary to extract the teeth, and frequently it seems better to leave them, as what remains of them heals in and may be of service. A second incision through the jaw is next similarly sawn well behind the disease. It severs the body from the ramus by an oblique cut, but its precise situation will vary according to the extent of the disease. inferior dental artery generally gives no trouble, but if it bleeds from the inferior dental canal it is most easily controlled by inserting into the bony canal the end of a wooden lucifer match trimmed to a point by a scalpel and dipped in

oil of turpentine to disinfect it, the projecting part being cut off flush with the surface of the bone. This securing of the artery may be done either now or later.

The next stage of the operation consists in dissecting down the loose part of the jaw along with the disease and the parts lying over the digastric triangle, and severing them from the side of the tongue, the digastricus, mylohyoid, and hyoglossus muscles. If the side of the tongue be involved, its disease is removed at the same time.

It may be remarked that, as the disease in the submaxillary gland has usually not extended to the skin, it is not necessary to make any cutaneous incisions below the level of the base of the jaw. But if the disease should have involved the skin, a couple of converging incisions may now be made in it by a scalpel or sharp-pointed scissors, care being taken to keep well free of the limits of the disease; or a vertical incision may, in any case, be made downward if required for space or drainage.

The most advantageous way to separate the disease from the side of the tongue and the digastric triangle is the following: The loose portion of the jaw is seized by the left hand and doubled downward, exposing the floor of the The mucous covering of this is divided by sharp-pointed scissors from the one point of section of the jaw to the other. left hand, grasping the jaw and embracing the diseased parts, so as to recognize their limits by the feel, now draws these outward and doubles them down towards the neck, while the scissors severs the soft parts between them and the tongue and hyoid bone. While cutting in this manner the facial artery is divided, but so tense are the parts that it does not usually bleed, but appears as a gaping tube, which can be grasped by the forceps. It is well, however, to have a stout pile or other forceps ready to seize it in case of its giving rise to troublesome hemorrhage. There is usually little or no hemorrhage in this part of the operation.

If the part removed be now washed and examined it will be seen whether the whole of the disease has been taken away, and if this prove not to have been the case, the portion left can be easily dissected off, so free is the access obtained in this operation. More of the jaw may also be sawn off if required.

The wound is closed by passing harelip sutures through its vertical portion, and the anterior and posterior ends of its horizontal part may be secured by continuous catgut suture. The middle is best left open for drainage, and gives egress to the end of a strip of iodoform gauze, which is packed between tongue and skin to serve as a capillary drain and prevent the fetor that otherwise occurs in mouth-operations. The gauze is drawn out on the second day or later.

EXTERNAL ŒSOPHAGOTOMY IN THE OPERATIVE TREATMENT OF CICATRICIAL STRICTURE OF THE ŒSOPHAGUS.

WILLY MEYER (New York Medical Journal, November 19, 1892), after a discussion on the subject of external esophagotomy, offers the following propositions:

- r. After swallowing acids, etc., sounding should be begun as soon as it can be made out that the internal wounds have healed, certainly not later than two to four weeks after the accident. This prophylactic treatment has to be continued at regular intervals for a long period; if necessary, for life. Gastrostomy can be primarily performed for this purpose (Maydl, Von Hacker).
- 2. If a stricture of the œsophagus has developed and is impermeable from the mouth, the patient should submit to an operation as early as possible. No forcible dilatation or boring with bougies should be permitted. If the latter is done, the formation of a false passage is favored. The œsophagus has thus often been perforated.
- 3. External œsophagotomy for the establishment of a temporary fistula in the neck (œsophagostomy) will be found useful and sufficient in many of these cases, especially in children. The stricture generally can be passed quite easily from this opening. A tube can be left in situ without the annoyances which are caused by passing it through the nose and pharynx. This operation is always indicated if, besides an impermeable stricture in the lower portion of the œsophagus or behind the bifurcation of the trachea, a second (or third) one is present at a level with, or not far below, the cricoid cartilage.
- 4. In grown patients and those who are emaciated and require immediate nutrition, primary gastrostomy, with subsequent retrograde sounding, may be preferable.
- 5. If the stricture has been successfully stretched, and if the same sound which passed from the wound in the neck can also be pushed down through the mouth, the fistula should be closed. If gastrostomy has been performed, closure of the fistula generally requires laparotomy and separate suture of stomach and abdominal wound.

- 6. In a number of cases there is a limit to stretching and divulsion, or the repeatedly-widened stricture rapidly recontracts. Then internal esophagotomy is indicated as the only means of curing the patient.
- 7. Internal œsophagotomy, if performed under these circumstances, is a very dangerous operation, mainly because we have no means by which the operating field may be kept sterile.
- 8. A thorough disinfection of the intrathoracic portion of the esophagus seems feasible by first adding gastrostomy to external esophagotomy, and vice versa. Then the operating field and the stomach can be cleansed by antiseptic irrigation before and after the operation. Through temporary antiseptic tamponade of the cardiac portion of the esophagus and of that between the fistula in the neck and the pharynx we may hope to guard against contamination of the wound.
- 9. From a wound in the neck internal cesophagotomy can be carried out in the same way and with the same instruments as are used for dividing strictures of the anterior urethra from within. The division should be made in a retrograde way only, the knife having been first passed beyond the stricture. A guide pushed up from the gastric fistula will help to accomplish this, in obstinate cases. It may become necessary, especially in adults, to have an instrument of a special length and curves constructed for this purpose.

### Reviews.

BOTANY: A CONCISE MANUAL FOR STUDENTS OF MEDI-CINE AND SCIENCE. By Alex. Johnstone, F.G.S., Lecturer on Botany, School of Medicine, Edinburgh. With one hundred and sixty-four illustrations and a series of floral diagrams.

New York: D. Appleton & Co., 1892.

To condense to the size of this little Manual such a comprehensive subject as botany, and in a style at once cogent and lucid, demands talent of high order in the art of condensation and selection. While we cannot consider this little book a masterpiece, yet its merit is sufficient to commend it to the overworked student, who has not time to digest the more voluminous works. Although we deem that part of the text devoted to the consideration of vegetable morphology and histology superior to that which deals with the taxonomy, it is unsatisfactory, as clearness and simplicity have been sacrificed for brevity. The value of this

Manual, in our estimation, depends wholly upon the illustrations. If the text is insufficient, it is more than compensated for by the profusion and excellence of the diagrams, and this is one instance in which the text is subordinate to the illustrations. The author, with happy felicity, has supplemented to the text an admirable glossary which cannot fail to facilitate the task of the beginner in acquiring a knowledge of technical terms. The index is quite complete, and here we have nothing of which to complain. The quality of the paper, the character of the printing, and the neatness of the binding are evidences that the publishers have fully discharged their duty and placed upon the market a beautiful little volume.

D. B.

A MANUAL OF JURISPRUDENCE AND TOXICOLOGY. By Henry C. Chapman, M.D.

Philadelphia: W. B. Saunders, 1892.

As is stated in the preface, this Manual embraces essentially the course of lectures on medical jurisprudence delivered by the author to the students of the Jefferson Medical College during the session of 1891 and 1892.

In introducing his subject the author deals in a simple and forcible way with such important practical matters as the relations of the physician to the coroner, the manner of making post-mortem examinations in medico-legal cases, the relations of physicians to the courts, and also ordinary and expert witnesses. The last-mentioned topic is of so much importance that it will bear more than a passing notice.

Dr. Chapman defines the ordinary witness as one who testifies simply to matters of fact of which he has personal knowledge; the expert, as one who likewise testifies to matters of fact, but concerning which he has special professional expert knowledge such as ordinary witnesses cannot be expected to have. pert is expected to give, in other words, an opinion based upon professional training. The doctor then, further, says, the expert's "knowledge of the particular facts of a case, however, will depend entirely whether he sees proper to make himself acquainted with them or not. No law can compel, for example, a physician to examine the contents of a stomach, with the view of determining whether they contain a poison, if he refuses to do so. . . . The physician may give such reasons as he pleases for refusing to undertake a medico-legal investigation, and no law can compel him to do so." The correctness of these statements cannot, of course, be questioned. Further on, however, the author says, "... Any physician may be called upon

by the Commonwealth or the defendant, in murder cases, for example, to give testimony. It is not only desirable, but most important, under such circumstances, that if the physician agrees to give his time to the Commonwealth or the defence, the matter of compensation should be definitely fixed. If a physician be subpænaed as an ordinary witness, which summons he must obey, and, having given his evidence in court, the Commonwealth or the defence endeavors to obtain an expert opinion upon the facts testified to in addition to the testimony as to the mere facts themselves, the physician is justified in refusing to answer. If, for example, a physician happens to see a man stabbed, and is subpænaed as an ordinary witness to testify as to the facts, he must answer questions bearing directly upon such facts as he observed. But should the judge, prosecuting attorney, or defence ask a physician who has been subpoenaed strictly professional questions, which an ordinary witness, such as a laboring man, could not possibly answer, and which he alone can answer, on account of his being specially qualified, the physician, in justice to himself, should refuse to answer them. The court has no more right to take advantage of the physician's professional knowledge and skill in extorting evidence from him without proper compensation than it would have to take his property; for his knowledge is his property, his capital."

From the stand-point of right, of justice, of morality, there can be no doubt of the correctness of Dr. Chapman's views; but, unfortunately, these views are not in accord with law! Physicians have, on a number of occasions, been held in contempt of court for refusing to answer questions involving expert knowledge, under precisely the circumstances detailed by Dr. Chapman. It was once the misfortune of the reviewer to be subpoenaed in a case of which he had accidental knowledge only. The facts of the case as remembered were cheerfully testified to. Thereupon the attorney for the prosecution asked bluntly, "What is your diagnosis of this case, and what is your opinion of its future?" The physician declined to answer, and appealed to the judge, stating that the answer required the exercise of expert knowledge,—of knowledge acquired only after many years of unremunerated work in the hospitals; of knowledge so special that even few among physicians possessed it; and, further, that no offer of remuneration had been made by counsel; that, indeed, the circumstances under which the subpoena was served were such as to justify the belief that the lawyer for the prosecution was guilty of a premeditated attempt to extort an expert service without the payment of a fee. The court, which happened to be represented in the person of one of our most learned, most cultured, and most gentle judges, listened quietly and patiently to the entire appeal. He then expounded the law at some length, but in substance as follows: "Doctor, you are under oath to tell the truth, the whole truth, and nothing but the truth. Any knowledge that you may possess of this patient directly, or any knowledge that you may possess bearing upon the case most remotely, is a part of the truth, of the whole truth, and I must direct you to Under the circumstances there was nothing else to do but to answer. Law, therefore, is not, in such instances at least, synonymous with justice. Nothing can be more irritating to a physician than an experience of this kind; nothing can be better calculated to disgust him with lawyers and the courts, and to make him avoid by all means possible the sub-It is very doubtful, therefore, whether the Commonwealth or the purposes of trials are best served by such an unfortunate condition of affairs. Justice certainly requires either that the laws be changed or that some provision be made for the payment of the expert by the court. It is a grim satisfaction, however, for the physician to know that when he reveals such a contemptible trick as was resorted to in the case just detailed, it makes a most unfavorable impression on the jury as regards the lawyer concerned. Indeed, before the average jury, who have their own ideas of justice, it is equivalent to wrecking his case.

The various subjects proper are considered by the author in the following order: The signs of death; wounds; the examination of blood-stains; burns and scalds; death from starvation, heat, cold, and lightning; rape; pregnancy; fœticide; infanticide; legitimacy; feigned disease; insanity; and toxicology. The space devoted to each particular topic is necessarily brief, but the presentation is always thorough, no important point being omitted. In addition, the text is liberally interspersed with excellent illustrations, many of which are original. Further, the style of the author is at once pleasing and interesting, and before we have turned very many pages, we find that we have a very readable book before us, and one, too, that is admirably adapted to the wants of The author has evidently borne in mind the fact, too often forgotten, that the time of the student is limited, and he has presented the essentials of a complex and difficult

subject in a most acceptable form, and has at the same time avoided a too elementary treatment of it. F. X. D.

Kirke's Hand-Book of Physiology. By W. Morrant Baker, F.R.C.S., and V. D. Harris, M.D. Thirteenth edition. Illustrated.

Philadelphia: P. Blakiston, Son & Co., 1892.

This is a book which was evidently published on the other side. It is also evident that the American imprint was placed upon its title-page in England. The paper is rather flimsy; we suppose with the object of getting a large number of pages in a comparatively small space. There are, in consequence, about nine hundred pages in the volume, which, from its thickness, one would judge contained about five hundred. To those who have been interested in the study of physiology during the last twenty years. "Kirke's Hand-Book" is probably very familiar, and the fact that it has reached the thirteenth edition proves that it must have been largely employed as a textbook in medical schools.

The editors, in their preface, state that it has been brought up as far as possible to the present physiological knowledge, and on looking over the pages we are impressed with the fact that they have succeeded fairly well in maintaining the book in its old position. Of course, it is to be remembered that it is not comparable to the work of Landois and Stirling, or to the classic of Dr. Michael Foster, of Cambridge; but, being a much smaller and cheaper work, it does, however, fill a place which is not filled by any other work, unless it be that of Yeo.

### Correspondence.

#### LONDON.

(From our Special Correspondent.)

Japanese Camphor—Ophthalmological Society: I. Kerato-Malacia in Children. 2. Probable Rupture of Optic Nerve. 3. Portable Sterilizing Apparatus—Deaths under Anæsthetics—Strontium Bromide in Vomiting—A Clinical Pulse-Manometer—Poisoning from Tinned Sardines—Radical Treatment of Severe Club-Foot in Children.

The Board of Trade Journal for November gives some interesting details with regard to the camphor trade of Japan. As is fairly well known, the camphor-tree is a species of laurel which grows in the mountainous parts of the island, far from the sea. The tree may grow to an enormous size, and the trunk in many instances is as much as ten to fifteen feet in

diameter, and rises for about thirty feet without branching. The wood is excellent for ship-building. There seems to be a surprising reticence among the authorities who could furnish information with regard to the culture and actual manufacture of the products of the camphor-tree. There is, besides, an enormous amount of adulteration practised. The camphor is extracted from the chips of the tree by a process of distillation in a current of steam. The steam passes over the chips into a series of wooden receptacles with perforated bottoms, the last of which contains straw. The crude camphor crystallizes on the straw in this last vessel. Along with the camphor proper there passes over a quantity of a volatile oil, which is not crystalline at the ordinary temperatures, but possesses a strong but pleasant camphoraceous odor. This oil is held in high esteem by the Japanese, not only for industrial purposes, such as illumination, but also as a remedial agent for external use. In this respect the oil acts as an undoubtedly valuable stimulant to the skin, and is more valuable than the liniments of turpentine or camphor usually employed in bronchitis and similar chest-affections. Few houses in the island are without their bottle of camphor oil, which they use for rheumatism, sprains, colds and coughs, and many other ailments. The market price of drained camphor is about \$38.25, and for the oil \$5.25, for a picul (133½ pounds).

At the last meeting of the Ophthalmological Society a paper was read by Mr. Spicer on "Kerato-Malacia in Children." He pointed out the great liability to the appearance of gangrene of the cornea in underfed, ill-nourished children, especially when their vitality was further lowered by any long illness. In such circumstances a simple conjunctivitis may run on to perforation or complete destruction of the cornea. In the later stage of a disease like tubercular meningitis, where paresis of the orbicularis prevented closure of the eyelids, there was great danger of the cornea undergoing sloughing and perforation. This would occur without the appearance of much sloughing or purulent discharge. In many other cases the sloughing was not due to nutritional defects, but to a diminished sensibility to irritation. As for treatment, a rich diet was indicated, and cases under his care had been treated by Kepler malt extract, with cod-liver oil and instillations of eserine. Several cases were described in which this treatment had been adopted with success.

Brigade Surgeon Brockman said that the condition was common in India during times

of famine, both in adults and children. It was especially common in the victims of congenital syphilis. The conjunctiva would become dry and covered with an unctuous material, and sloughing took place very rapidly. Total destruction was by no means uncommon. For treatment he recommended cod-liver oil internally, with hydrochloric acid and nux vomica, and pure vaseline under the lids, along with instillations of eserine.

Dr. Priestley Smith had seen cases originate from exposure of the eyes during sleep. Such cases he had treated simply by the use of a strip of plaster to keep the lids closed; they were common in association with severe illnesses. In Graves's disease there was a similar risk. The application of a supporting bandage in such a case would effect a temporary cure. In some cases he had adopted the expedient of slitting the edges of the lids in a V shape, and uniting the raw surfaces. This gave excellent results, and the edges could easily be reopened at a future time.

At the same meeting a paper was read by Dr. Johnstone Taylor, on a case of probable rupture of the optic nerve as the result of a blow from a chip of wood. In this case the blow was followed by total blindness. Five days after the injury there was no direct reflex, convergence was defective, media clear, but the disk hazy, showing also a hemorrhage. Divergence gradually became marked, and the disk became pale and the vessels shrank. There was no visible rent of the retina or choroid. It was suggested that rupture of the nerve had taken place, either as a result of a sudden violent rotation of the globe or from a sudden croptosis due to the insinuation of a foreign body.

This case led to the narration of a number of cases by Messrs. Tweedy, Frost, and Buller, which showed what large foreign bodies might become lodged in the orbit without giving rise to any marked external damage. In one case a large piece of pipe-stem lay behind the globe for several months without even the patient's knowledge that it had got there at all. In obscure cases like that of Dr. Taylor it was, therefore, imperative to search carefully for a foreign body.

A very neat and useful sterilizing apparatus for both instruments and dressings, devised by Mr. Bronner, was also shown. The apparatus contained convenient trays for holding the instruments, which were all mounted in metal handles, but were so well balanced as to be practically indistinguishable in use from the old wooden or ivory-handled ones.

The importance of the question how to administer an anæsthetic was probably never be-

fore more thoroughly appreciated by the profession than it is at the present time. steoreotyped heading, "Death under Chloroform," still appears with uncomfortable frequency in the medical journals, and on reading some of the published cases one is struck with the apparent hopelessness of the task of finding out an inevitably safe mode of giving The Hyderabad Commission an anæsthetic. has done something, and the further experiments now being carried out by Professor Hare will probably do more, to throw light on the causes of death under these circumstances: but in the mean time there can be no doubt that a greater measure of safety can be obtained if all our anæsthetists are thoroughly instructed in the existing and already-recognized facts about this special form of medication. I think that everybody who has, or may have, to administer an anæsthetic would do well to look at a little work by Dr. Dudley Buxton. which has just reached its second edition in this country. The work is a thoroughly practical manual on anæsthetics, but it leaves little to be desired even by the reader wishing to acquaint himself with most of the controversial points with which the question is bristling. Of course no such work can give the confidence of actual experience, but all the directions are short, clear, and suggested by a long spell of practice, and hardly an emergency could occur which is not anticipated by the author.

The therapeutic value of the salts of strontium has received more than one notice in the pages of the GAZETTE. An Italian clinician, Dr. Coronedi, has recently tried it in the form of strontium bromide in cases of vomiting of nervous origin. Dr. Dougall, of Glasgow, has tried this drug in similar conditions, and is much pleased with the results. A patient who suffered from chronic gastritis and frequent vomiting, in whom a great number of the recognized gastric sedatives had been tried without avail, quickly obtained relief on taking 30-grain doses of strontium bromide in water. He considers this salt worthy of extended trial.

At the West London Medico-Chirurgical Society, Dr. Rayner Batten showed a useful form of clinical "pulse-manometer," intended to replace the more complicated and not particularly reliable "sphygmo-manometer" of Von Basch. This little instrument, arranged on the principle of a spring-balance, is applied vertically over the radial artery, and pressure is applied by means of a single finger on the top of the instrument until the fingers of the other hand, placed peripherally, cease to detect any pulsation. The pressure required can then be

read off on the scale. In determining the pressure necessary to extinguish a pulse, one must be on one's guard to eliminate the effect of a recurrent pulsation,—a phenomenon very common in some subjects with low blood-pressure. For this reason it is well to always use more then one finger to ascertain when the pulse has been extinguished.

The great care necessary in the selection of food for tinning has been recently painfully evidenced in the case of a man who was seized with a fatal illness as a result of eating tinned sardines. Dr. Stevenson, official analyst to the Home Office, was able to separate an extremely minute quantity of an alkaloidal substance from the remainder of the tin of sardines, which caused the death of a white rat four and a half hours after its injection. The stomach and ejecta of the deceased man also yielded similar toxic substances. The circumstances of this case, and the extreme rapidity of its fatal issue (less than four hours), recall the sad death of Dr. Leonard Wooldridge a few years ago. In this case the poisonous agent was almost certainly contained in a fish sandwich, and the symptoms bore a very strong resemblance to those shown by Dr. Stevenson's case. It seems that especial care is required in the selection of fish for preservation.

A paper was also read before the Society by Edmund Owen, F.R.C.S., on the radical treatment of severe talipes equino-varus in children. He suggests that the orthodox treatment, by subcutaneous section of the tibial tendons and of the plantar fascia, leaves much to be desired. Though subcutaneous surgery has without doubt played a useful part, it is at the present day more or less of an anachronism. In the treatment of reducible inguinal hernia it has been entirely superseded, and greatly to the advantage of ruptured people. Subcutaneous operations are, however, still the rule with orthopædic surgeons. The author suggests, however, that apart from the uncertainty as to what structures are actually divided in such operations, the resistance of the skin in a severe case of congenital club-foot is an important item. The operation recommended by him, instead of the old proceeding, is that which was first introduced by Dr. A. M. Phelps, of New York. It consists in dividing every resisting structure which is encountered in a free vertical incision passing from the dorsum of the foot into the depths of the sole over the head of the astragalus, the tendo Achillis having been first divided. The improved position of the foot is thus obtained by lengthening the inner border of the foot rather than by shortening the outer border, as is usually accomplished in tarsectomy. It consists in inserting a broad wedge of space into the astragalo-scaphoid joint. This space is duly filled up by granulation tissue, which eventually becomes converted into a strong and trustworthy cicatricial band between the anterior and posterior segments of the foot.

The author is highly satisfied with this "open" method of treatment, which he has now adopted for several years. Further, he hears from Dr. Phelps that he (Dr. Phelps) has done the operation altogether two hundred times, with no fatal result, and with but a very small proportion of relapses.

T. J. BOKENHAM.

### BEEF-MEAL IN THE TREATMENT OF THE INSANE.

In the Clinic of the Municipal Insane Asylum of Breslau, Wernicke and Kemmler have employed beef-meal for the artificial feeding of the insane who refused ordinary nourishment. Where patients are very anæmic and need nitrogenous food, it has been found preferable to the employment of cocoa with eggs or sugar, or other forms of food ordinarily given under such circumstances.

Wernicke has found that it is best to add the beef-meal to thick porridge, or a gruel of oatmeal, which has been rendered appetizing with salt or milk or beef extract. One or two eggs may be stirred with this, and from 1000 to 1500 cubic centimetres of the mixture is prepared in which is placed about three teaspoonfuls of beef-meal. This is readily given by the tube two or three times daily. In cases in which the patient dislikes meat foods, beefmeal can be well disguised by adding to it a sweetened mixture of cocoa or flour. It was also found that by the use of beef-meal a varied diet, so necessary to the preservation of the vital functions, could be readily administered, and Wernicke concludes that it is preferable to the meals which are put upon the market for the nourishment of infants.

### A POWDER FOR HYPERIDROSIS.

R Washed sulphur, gr. xxx; Powdered arrowroot, 3iv; Salicylic acid, gr. vii.

This powder is to be dusted over the feet and between the toes, for the relief of hyperidrosis.—L' Union Médicale, November 12, 1892.

# Therapeutic Gazette.

Whole Series, Vol. XVII. DETROIT, MICH., PA., March 15, 1893.

Third Series, Vol. IX. No. 3.

### CONTENTS. Original Communications. Cancer of the Rectum and Sacral Re-Leading Articles. Homatropine for the Correction of Errors Reports on Therapeutic Progress. A Simple Method of Evacuation Applicable to the Treatment of Pyosalpingitis and Collections of Fluid in the Cavity of the Pelvis.. The Action and Uses of Iodide of Stron-The Failure of Diuretin to avert Ure-

P	LOR
The Treatment of Diarrhoea in Infants	1/2
An Ointment for Chapped Skin	172
An Ointment for the Skin-Spots of Preg-	-,-
nency	
An Adhesive Antiseptic Ointment The Use of Spray in Diseases of the	172
The Heart Commission Discourse of the	172
The Use of Spray in Diseases of the	
Stomach	¥73
I ne Elimination of Creosote	¥73
Treatment of Erysipelas	¥73
Antiseptic Treatment of Pulmonary Tu-	1
berculosis by Inhalations of Iodoform-	
ated or Iodolated Essence of Turpentine	274
The Treatment of Arterial Cardiopathies	<b>274</b>
The Treatment of Diphtheritic Angina	
by Chromic Acid	277
by Chromic Acid	178
Indoform Injections in the Treatment of	-,-
Tuberculosis of Joints	178
Tuberculosis of Joints	-/-
toward	
The Actions of Caffeine and of the Prod-	279
uct of Distillation of Coffee	180
The Action of Quinine, Atropine, Pilo-	100
The Action of Quinne, Atropine, Filo-	1
carpine, Antipyrin, and Antirebrin on	1
the Elimination of Oric Acid by the	
carpine, Antipyrin, and Antifebrin on the Elimination of Uric Acid by the Urine, and on the Number of Leuco-	
cytes in the Blood	180
The Action of Alcohol on the Circulation	181
Citric Acid as a Means of Sterilizing	_
Water during Epidemics of Cholera The Therapeutic Uses of Asaprol The Dietetic Management of Pulmonary	181
The Therapeutic Uses of Asaprol	182
The Dietetic Management of Pulmonary	
Tuberculosis	z8e
Tuberculosis	
matism	183
The Treatment of Filaria Sanguinis	•
HODINS	183
The Treatment of Anzemia following	3
Post-Partum Hemorrhage by Hypo-	
dermoclysis	78E
dermoclysis	5
of Phthiais	-88
Incorporate in Descenters	190
Ipecacuanha in Dysentery Treatment of Chronic Bright's Disease Hydronaphthol in the Treatment of	-90
Undersandable in the Treatment of	191
Cholera	192
Ine Comparative Action of Antipyrin,	
Phenacetin, and Phenocoll on the Cir-	
culation and Bodily Heat	192
The Treatment of Scorpion-Sting The Surgical Treatment of Trachoma	193
The Surgical Treatment of Trachoma	194
The Danger of Infection while operating	
for Trachoma	195

	•
	Page
2	The Treatment of Blepharitis with Cor-
•	rosive Sublimate 195
-	Treatment of Ulcers of the Cornea 106
2	Remarks on the Treatment of Purulent
2	Comissactivitie
	Nitrate of Silver in the Treatment of
3	Furulent Conjunctivitis
3	Poultices in Ophthalmic Surgery 197
3	Extraction of Steel from the Interior of
	the Eye with an Electro-Magnet 198 Ptosis and its Surgical Treatment 298
4	Ptosis and its Surgical Treatment 298 Treatment of Rebellious Blepharospasm 299
7	Extraction of Cataract with Reference to
١.	the Avoidance of Entanglement and
7	Hernia of the Iris, or of Attenuating
8	the Effects of such Accidents
. 1	Ripening of Immature Cataracts by
8	Ripening of Immature Cataracts by Direct Trituration
	The Accidents caused by Injections of
9	Cocaine
	Action of Atronine and Faction of the
٠,	Pupil 200
	Warm Sublimate Solutions
	Abadie's Method for the Treatment of
	Migratory Ophthalmitis 202
0	Surgical Interference in Cases of Severe
I	Neuralgias of the Pelvis
. 1	The Antiseptic Management of Wounds son
I 2	Course of Normal Labor, as studied
•	by the Toko-Dynamometer 208
	The Use of Ichthwol in Figures of the
_	Breast
3	The Use of Ichthyol in Fissures of the Breast 203 The Acceleration of Labor by Intra-
	uterine Injections of Glycerin 203
3	Rupture of the Bladder so3
	Ischio-Pubiotomy so4
_	Symphyseotomy
5	Operation for Cancer of the Breast sos Treatment of Gonorrhoea soo
8	Myxordema
•	The Treatment of Amenorrhoea in Young
1	Girls so8
	Implantation of the Ureter into the Rec-
	tum sog
	<b>9</b>
_ '	Reviewssop
2	
3	Correspondence.
7	London Letter
5	The Action of Sulphonal

### Original Communications.

CANCER OF THE RECTUM AND SACRAL RESECTION—OVARIAN TUMOR AND OVARIOTOMY.

CLINICAL LECTURE DELIVERED AT THE JEFFERSON HOSPITAL, JANUARY 3, 1893.

By E. E. MONTGOMERY, M.D.,

Professor of Clinical Gynsecology, Jefferson Medical College; Obstetrician to the Philadelphia Hospital; Gynsecologist to St. Joseph's Hospital.

CENTLEMEN:—This patient, fifty years of age, brought before you through the courtesy of Dr. Casselberry, of Hazleton, has been suffering, more or less, for the last year from

distress during evacuation of the bowels. This, of late, has been very greatly aggravated, attended with constant tenesmus, straining, continual desire to have the bowels evacuated, and a discharge of blood and pus. Upon examination, it was found that a stricture of the bowel occurred about half an inch from the anal orifice, extending about two inches up. This stricture was produced by an infiltration of the rectal wall from malignant disease. It is not a tight stricture, as the finger can be passed through it; but the absence of peristaltic action and the contraction together have given rise to inability to complete the evacuation of the bowels and to the tenesmus of which we have already spoken. If this condition were permitted to continue undisturbed, it would result in complete obstruction of the bowel. As the finger is passed into the vagina, it is found that its posterior wall is infiltrated to a certain degree, and its mucous membrane cannot be pushed over or moved upon the infiltration. This, as I have already informed you, is an almost certain indication of malignant disease. In a patient suffering from such a state, we are confronted with the question as to what is best to How can we make her more comfortable. and can we give her hope of a radical cure of the disease which is beginning so insidiously. and which will, if uninterrupted, terminate her life? With a view to making the patient more comfortable and prolonging her life, the stricture could be dilated by the frequent introduction of bougies, or a knife could be introduced through the stricture and an incision made posteriorly through the entire thickness of the rectal wall, and the stricture subsequently dilated. The latter operation would be attended, of course, with some danger of fæcal infiltration and the formation of a post-rectal abscess. This danger avoided, the injury would heal up by cicatricial tissue or become infiltrated by the disease, rendering the subsequent condition of the patient as bad as at present. Neither operation relieves the patient of the great discomfort from contact of fæcal matter with the ulcerated and abraded surfaces, a condition which keeps up the distressing tenesmus from which she has been suffering. A palliative operation could be done by making an opening into the descending colon higher up, to establish an artificial anus, and secure subsequent evacuations of the bowel through it. This opening might be made either in the lumbar region, as advocated by Amussat, or in the inguinal region. The operation is known as colotomy, although the term colostomy would be the preferable one. The only reason for advocating the lumbar incision is that by making an opening in this region we are enabled to reach the colon behind the peritoneum, and thus open the gut without injury of that member. With the later methods of operative procedure, however, the opening of the peritoneum is no longer considered particularly perilous, and as the lumbar incision places the outlet of the bowel in an almost inaccessible position, making it difficult for the patient to care for it, the inguinal incision is preferred.

The manner of performing the operation in the latter region will depend somewhat upon whether it is intended to be a temporary or permanent procedure. Where temporary, the bowel will be opened upon one side, its edges brought out and stitched to the skin. Where permanent, the preferable plan of procedure is to cut the intestine in two, inverting the edges of the peripheral end and sewing it up. The central end is brought out at the opening, and its edges stitched fast to the skin, thus making this the terminus of the bowel. The advantage of this procedure is that there is no opportunity for fæces to pass into the lower portion of the gut, making it a reservoir in which the material becomes inspissated, to subsequently greatly annoy the patient. These operations, however, are merely palliative. They render the patient more comfortable for the time being, but afford her no hope of cure. With a view of relieving pain and distress they are eminently justifiable. They leave her, however, in a condition which is an exceedingly dangerous one, in which it is necessary for her to assume an unnatural attitude whenever the bowels are moved. For these reasons we prefer, wherever possible, to establish the artificial anus posteriorly, removing, if necessary, a portion of the sacrum to do it. This I propose to do in this patient to-day, and take out the one side of the fourth and fifth sacral vertebræ. We will dissect out the rectum and anus, and in this patient part of the posterior wall of the vagina. The healthy end of the bowel will be brought out at the lower end of the resected sacrum and stitched fast to the skin. Such an operation is, of course, not applicable in every case. Where it is, in those cases in which the disease is limited to the rectum, it should be chosen for the following reasons: 1, it affords the patient hope of a radical cure; 2, it gives her an artificial anus in a position in which she is not obliged to assume an unnatural attitude to have the bowel evacuated; 3, she can more readily wear a pad or compress by which the outlet can be controlled; 4, establishing an artificial anus in this region is an advantage, in the fact that the opening is situated close to bone, and consequently there is less likelihood of cicatricial contraction of its outlet.

Preparatory to the performance of the operation we have had the patient thoroughly shaven, the vagina cleansed, and the rectum washed out. We have cleansed the vagina for the reason that we expect to open into the canal. In performing the operation, we place the patient on her left side, the limbs drawn up, lying slightly prone. A bow-shaped incision is made from the right sacro-iliac synchondrosis across the median line to the left and beyond the apex of the coccyx. The tissues are dissected off the sacrum and coccyx,

the latter bone seized, disarticulated, and enucleated. The left side of the fourth and fifth sacral vertebræ are cut through with bonepliers. Incision is made below the third sacral foramen for the reason that, if it were carried above this, there would be danger of injury to the sacral plexus of nerves. The fourth and fifth foramina of the sacrum in front give vent to branches distributed to the bladder and rectum. If these were cut on both sides, we would have paralysis of these organs with disturbance of their function. Cutting but one side, the remaining nerves compensate for the Incision is made upon the left side for the reason that, as you remember, the rectum is situated more to the left side of the pelvis, and consequently incision here comes directly upon its posterior surface. With this incision you see there is quite considerable bleeding, particularly from the median sacral artery. This is controlled by packing with sponges and making pressure over these bleeding ves-The rectum is now pushed off from the sacrum, and we complete our dissection around it below, cutting out the rectum and anus completely, and carrying our incision into the posterior surface of the vagina, removing at least an inch and a half of its posterior wall. rectum is dissected up, and we cut above the disease. In doing so, on its anterior surface I open, as you see here, into the peritoneal cavity. The bowel is now drawn down until we have a sufficient amount of healthy tissue below to attach it readily to the skin. Before opening the bowel we will sew up the peritoneal cavity in order to prevent its being soiled with fæcal matter. The bowel is then cut off, and I pack some gauze into its orifice to prevent the extrusion of fæcal matter. edges are now sewed fast to the skin on either side, particular care having been taken first to smooth off the end of the sacral vertebræ, so that undue pressure will not be made upon the gut. Having done this, the wound is sutured above and below, first, however, introducing sutures through the posterior wall of the vagina to close up the wound cavity. In bringing out the bowel and stitching it fast, it is very important to make sure that it is not drawn taut, for, if so, it is likely to slough off, rendering the operation to that degree ineffectual. wound is closed above and below, excepting at the inferior part, where the end of the gauze drain makes its exit. The cavity above, from which the rectum has been taken, has been filled with an iodoform-gauze packing. wound is closed by catgut sutures. In order to make sure that there is no traction upon the skin edges, where attached to the gut, we will introduce a deep suture, fastening either end with perforated shot, and draw it out in such a way that the skin edges will be inverted. The bowel is found to be filled with a considerable amount of hard fæcal matter. The wound will be dressed as in ordinary procedures, changed frequently, or whenever it is apparently soiled by fæcal discharge or secretion from the wound. The patient is considerably shocked, and will be given at once hypodermic injections of strychnine; these will be kept up as they seem to be required.

Note.—This patient died at the end of forty-eight hours from suppression of urine; but an ounce was passed subsequent to the operation. It is a question in this case whether we did wisely in having resorted at once to so radical an operation; whether the preferable plan of procedure would not have been to have done colostomy, and thus afforded her relief by a much more simple operation, one which would not produce so much shock and would permit her to improve before it was necessary to resort to so serious an operation.

The next patient Dr. Reynolds, of Reynoldsville, Pa., kindly brings to us with the following history: She is forty-three years of age: has been suffering for quite a length of time from sensation of weight and pressure in the During the last two months there has been a remarkably rapid distention of the abdomen, and, as she lies before us, you will notice that this distention extends above the umbilicus, and it is situated higher upon the right side. There is a distinct crease or depression running between the mass on the right side and the one which is situated lower down on the left. The patient during its growth has become very greatly emaciated. From her appearance, the size of the growth, its sensation of elasticity or fluctuation, I am inclined to fear we have here to deal with an ovarian tumor or double ovarian cyst. The rapid growth, the marked emaciation, and the more or less fixation of the mass leads me to fear that it may be malignant. The abdominal walls are very thin. We make an incision in the median line an inch above the symphysis, carrying it towards the umbilicus. If we cut through the skin, superficial fascia, and aponeurosis of the muscle, we now pick up the tissue with forceps, and before cutting through it, examine it carefully to see that we have not the bladder. In doing so, you will notice that the bladder is found higher up than ordinarily, and if we were careless in our manipulation we might very readily have opened it, and thus had an additional complication. This accident has occurred quite frequently in the experience of some of the most skilful and careful abdominal surgeons. I happened to have this experience a few years ago, opening into the bladder before I realized what it was. It was immediately sutured with catgut, and the patient experienced no inconvenience during the convalescence. Opening the peritoneum, we are able to see this growth, and as I pass in my hand I find there are extensive adhesions. The growth itself is situated beneath the broad ligament, which it has pushed up over it. I am very careful, in enucleating this mass, to avoid its rupture. Having removed the mass upon the right, which is the larger, I now proceed to examine from the left, and find a mass lower down, which we peel out. Having raised up this sac, we will proceed now to the ligation of the vessels upon either side. This is done with chromatized catgut. Examining the pelvis still further, we find evidence of other cysts situated low down, one just over the rectum in Douglas's pouch. Breaking into this, we find it filled with clear fluid. These cysts are deeply and closely attached, and their removal would be attended with considerable danger, so we propose not to attempt it, but will open and pack their cavities with iodoform gauze, thus setting up an inflammation which will obliterate the As I look into the abdominal cavity, I see two or three small cystic masses, which are evidently degenerated mesentery glands. These we peel out. The drainage is accomplished by iodoform gauze, through its capillary action. We first take a piece of this gauze about a foot and a half long, tie a ligature to its central part and invert, and pack it into the abdominal cavity, spreading it out, and then packing inside this sheath or cover a sufficient amount of gauze to make pressure in the pelvis and prevent subsequent hemorrhage. The wound is closed above with catgut sutures. We prefer the gauze tent for this purpose for the reason that it is, through its capillary action, a very effective drain, and, as introduced into the cavity, it does not give rise to the infection of the cavity as easily as might take place with an ordinary glass drainage-tube. With the latter it is necessary that the cavity should be emptied every fifteen minutes to an hour. The introduction of the syringe for this purpose necessarily leads to drawing in of pathological germs and material, thus rendering liable the infection of the cavity and its subsequent suppuration. This patient will be kept quiet in bed; shock overcome by the use of artificial heat and by hypodermic injections of strychnine. As soon as her stomach will bear it, she will be given nutritious food in small quantities, and at any indication of elevation of temperature salines will be administered.

### SYMPATHETIC IRRITATION AND SYM-PATHETIC SEROUS IRITIS, WITH CASES.

A CLINICAL LECTURE IN THE JEFFERSON COLLEGE HOSPITAL.

By G. E. DE SCHWEINITZ, M.D., Clinical Professor of Ophthalmology in the Jefferson Medical College; Ophthalmic Surgeon to the Philadelphia Hospital.

CENTLEMEN: — We are concerned this morning with the affections in which one eye is implicated as the result of disease or injury to the other; in other words, with sympathetic irritation and sympathetic ophthalmitis.

You are probably aware that it is customary—indeed, it is important and scientifically accurate—to apply these terms to two essentially different conditions; but whether we deal with sympathetic irritation or with the more serious condition of inflammation, the eye which is implicated as the result of disease or injury of its fellow is described as the "sympathizing eye," and the one which is affected by the disease or injury which causes the implication as the "exciting eye." Bear these two terms in mind, as I shall have occasion to use them again in the descriptions which follow.

The first patient, a man, aged thirty, was injured by the premature explosion of a dynamite cartridge, causing such extensive laceration of his right foot that amputation was necessary. At the same time his left eye sustained injuries resulting in the lesions which I shall presently demonstrate to you. He has been under the care of Dr. William Forbes, and as the leg has entirely healed, Dr. Forbes has very kindly transferred him to the Eye Department for further treatment. You observe that there is a large scar in the lower and outer portion of the cornea of the left eye, passing through the ciliary region, to the margins of which the iris is attached, while the lens is cataractous, the aqueous humor turbid, the general eyeball coarsely injected, the tension slightly below normal, and there is marked tenderness in the upper portion of the ciliary zone. In other words, we have the lesions of traumatic irido-cyclitis and cata-Vision is entirely obliterated, and there is not the faintest trace of light perception in any portion of the field.

Ever since the injury the eye has been painful, but in the last few weeks this pain has

markedly increased, being present not only on pressure, but constantly. More than this, the other eye, while not tender to the touch, is sensitive to the light; there is increased lachrymation, impaired amplitude of accommodation, occasional shoots of pain through the brow and temporal region, and slight veiling of the margins of the optic nerve. The pupil is larger than one would expect in a patient at this age of life and with this exposure to light, although I have not been able to observe oscillation of the iris, a symptom which Mr. Gunn has stated to be present when a sympathetic irritation, which is the condition now presented to us, is about to give place to an actual inflammation.

The symptoms are sufficiently pronounced, and have been sufficiently persistent, to make enucleation of the excitor a proper surgical procedure. While it is true that a sympathetic disease of this character is a functional disturbance, and is by no means the necessary precursor of a sympathetic ophthalmitis, such an outcome is occasionally the case, and, even if it were not, the evident indication is to remove the cause which is exciting the functional disturbance which you here witness, and to relieve the pain which is occasioned by the traumatic iridocyclitis of the left eye.

As the eyeball is somewhat soft, and the conjunctiva closely adherent to it on account of the previous inflammation, I will enucleate the eye by Bonnet's method, although, as you know, by the Vienna plan the operation can be more rapidly accomplished. A stop speculum being inserted, I divide the conjunctiva with scissors in a circle close to the margin of the The tendons of the ocular muscles are cornea. now successively raised upon a strabismus-hook and severed. When the tendon of the external rectus is reached. I allow a small stump to remain, which may be utilized afterwards as a point of application for the forceps. By inserting the stop speculum somewhat more deeply, the eye, as you see, is made to start forward, the stump of the external rectus is seized with forceps, the eye drawn forward, the curved scissors introduced between it and the severed conjunctiva until the optic nerve is reached, which is cut squarely off. The attachments remaining are the oblique muscles, and these are now readily divided. Hemorrhage, you observe, is only moderate in quantity, and has practically ceased after the irrigation of the socket with a bichloride solution (1 to 8000). Iodoform is dusted over the surface of the wound and an ordinary antiseptic dressing applied. For a few days I shall exclude the light from the right eye in order that the symptoms of irritation may more readily subside.

On opening the eyeball, you notice the following interesting lesions: The cataractous lens and iris are firmly bound together, the ciliary body is thickened, the retina detached, and the centre of the vitreous occupied with this firmly-encysted abscess. I cannot find a foreign body, although we might reasonably expect a small portion of the cap. It is possible that it has not only penetrated, but passed entirely through the coats of the eyeball; in its course, however, lodging some infecting material, which has resulted in the suppuration which is so beautifully shown here.

This is a fair example of a very constant result of injury to the ciliary region, the wound being generally found in a zone about a quarter of an inch in width, surrounding the cornea, which Mr. Nettleship has aptly called the "dangerous region." Plastic or purulent cyclitis results, in our case followed by a purulent hya-The sympathizing eye presents a series of phenomena which are of the nature of a neurosis, and to which the term sympathetic irritation is applied. Under circumstances such as I have shown you to-day, the proper treatment is enucleation of the exciting eye, or, if not enucleation, one of the substitutes for this operation, particularly that one which is called evisceration. The result is almost uniformly a cure, and I doubt not that at a subsequent lecture I will be able to show you this patient, not only well in so far as the operation is concerned, but relieved of the symptoms in the sympathizing eye.\*

The next case is of a much graver nature, not only on account of the lesions which have taken place, but in relation to the preservation of vision. The patient, a young man, aged twenty-nine years, eleven weeks ago was injured by a piece of steel striking the left eye. The sight was lost at the time, and, as you see, there is a large cut through the upper ciliary region, which has healed with a puckered cicatrix; the iris is inflamed and bound down to the capsule of the lens, the anterior chamber shallow, the eye slightly shrunken, soft to the touch, and very tender on pressure; in other words, a traumatic irido-cyclitis with beginning shrinking.

No symptoms of trouble in the right eye appeared until a few days ago, when he presented himself at the clinic. Then, unfortunately, not an irritation, but a true inflammation had already begun. The entire eyeball was slightly

<sup>\*</sup> The symptoms of irritation rapidly subsided, and the patient is now entirely well.

injected, while around the margin of the cornea there was a zone of fine, pinkish injection. The iris was mobile, but at the lower margin of the cornea there was a faint haze, and one spot on the iris was a little thickened. The vision was normal, the optic nerve hyperæmic, the field of vision uncontracted, but there was slight tenderness in the ciliary region. patient was at once put upon small and frequently-repeated doses of calomel, atropine was instilled into the right eye, and the light ex-For twenty-four hours he appeared cluded. better. At the end of that time, in spite of treatment, the spot of infiltration in the cornea deepened, and a characteristic triangular deposit of opaque dots appeared in Descemet's membrane, and a soft synechia formed in the lower margin of the iris. He was now freely leeched from the temple, atropine was more vigorously applied, and protiodide of mercury was given in place of the calomel, together with tonic doses of quinine. These measures fortunately resulted in the tearing loose of the synechia which had formed, so that the pupil is round and widely dilated and the ciliary injection has somewhat subsided, although, as you see, the eye is red, inflamed, tender to the touch, and there is a patch of keratitis punctata.

In short, gentlemen, we have here the very serious condition of traumatic irido-cyclitis of the left eye, which, in all probability, contains a foreign body, and sympathetic serous iritis of the right eye, and we stand in the presence of a grave question for solution,—namely, whether or not to excise the excitor in the hopes that this, by relieving a source of irritation, may modify the dangerous organic disease which has already seized hold of the sympathizer.

In order to understand why there should be any hesitancy, we must revert for a moment to the probable explanation of sympathetic ophthalmitis. No doubt you will remember that formerly it was almost universally taught that this disease was due to a reflex action through the ciliary nerves, and therefore the name "sympathetic" was applied. Now, while we are not sure of the exact nature of this malady, nor thoroughly acquainted with the path of the morbid changes, the old hypothesis of transmission by the ciliary nerves has been largely abandoned and the theory of infection has been revived and, perhaps I may say, proved. The micro-organisms from the seat of original injury find their way, probably by. the sheaths of both optic nerves, to the sympathetic eye, and there set up an ophthalmitis, which may present itself in the form of an irido-cyclitis, a serous iritis, such as I show you to-day, or, more rarely, as a choroido-retinitis, while in many, if not in all, of the varieties of sympathetic inflammation the primary symptom is a low-grade neuritis or neuro-retinitis, although this symptom is not the one which first attracts the attention of the surgeon.

With these facts in mind you can readily understand that when the tissues of the sympathizer are infected, though excision of the excitor removes the original focus of infection, it does not destroy the morbid changes which have already seized upon the sheath of the optic nerve and the coats of the eye upon the opposite side. The question to be decided, therefore, is, Will the ultimate result be better if the medicinal treatment of sympathetic ophthalmitis is employed to the exclusion of operative interference upon the blind but exciting eye, or will the chances of recovery be improved by removal of the excitor? At the first blush it would seem that there is only one answer to this question,—namely, to remove the original cause,-but in certain instances the sympathetic disease has apparently been aggravated by this procedure, and a serous iritis has changed into a plastic type; at least this is the assertion of one or two very high authorities.

We must hence base our line of conduct today upon the teaching and experience of the best-known ophthalmic surgeons and upon the statistical information which has been gathered to elucidate this very point. We find that Noves, Berry, Schweigger, Swanzy, Schmidt-Rimpler, De Wecker, and many others that I might mention were I so inclined, are in practical accord that efficient help is gained in the treatment of sympathetic ophthalmitis by the removal of an exciting blind eye, provided the enucleation is performed when not more than two, or at most three, weeks have elapsed since the appearance of the sympathetic disease. Moreover, we are in possession of a great deal of statistical information. In 1886 a committee was formed in England to gather information on the subject of sympathetic ophthalmitis, and for this purpose the literature of the subject was examined and a circular containing a number of questions was sent to many prominent ophthalmologists. The very first question upon this circular is, When sympathetic inflammation has begun, does excision of the exciting eye influence its progress? And the following piece of evidence was presented in reply: Among two hundred cases, there were sixty-four in which the excitor was removed within a short time (that is, within three weeks) of the onset of the sympathetic inflammation, and of these the sympathizing eye was known to be lost in

only eight. In an almost identical number (sixty-five) the excitor was either not removed at all, or not until long after the sympathetic disease had set in, and in no less than twenty-six of these the sympathizer was lost. From these data the committee concluded that whether early removal of the exciting eye be positively useful in staying the disease or no, it certainly is not injurious, although no less an authority than Mauthner has asserted that it is when the sympathetic disease is of the serous form.

By way of recapitulation, a quotation from Noves is apropos: "The removal of the cause is the only effective treatment, and that means enucleation of the exciting eye. The operation is by far more satisfactory in the irritative forms, and there rarely does it fail. When the inflammatory condition is once begun, an early operation may check its progress, but this is not to be absolutely counted on, even if done on the very first day (Hirschberg). Enucleation, when the inflammatory process has gained decided headway, has little control over it; yet it does not aggravate it, as claimed by Mauthner. Sometimes it mitigates a patient's sufferings, and cases of effective relief are recorded." The weight of opinion, therefore, being in favor of operative interference, if for no other purpose than to check what De Wecker would call the transmission of impulses, I will excise this exciting eye.

This I do in precisely the same manner as in the previous case, and need not repeat the details of the operation. While Dr. Phillips is applying the dressings, I will open the eye and demonstrate the lesions. You observe that the ball is slightly shrunken and beginning to assume a quadrate shape, the retina is detached in folds, the ciliary body thickened, the vitreous slightly purulent, and lying in the long axis of the eyeball, stretching between the posterior surface of the lens and the optic nerve entrance, and entangled in the meshes of the detached retina, is a piece of steel twelve millimetres in length and three millimetres in In short, we have here conditions potent above all others to produce sympathetic ophthalmitis,—namely, traumatic irido-cyclitis and retained foreign body. The subsequent treatment of this case will consist of rest in bed, exclusion of light from the right eye, the frequent use of an atropine solution, and the internal administration of the protiodide of mercury to the point of tolerance, together with tonic doses of quinine.\*

Now, gentlemen, I beg you to understand that I have been describing to you the proper course of treatment in a case of sympathetic ophthalmitis, under the circumstances which this patient presents, provided the exciting eye is blind. A very different line of procedure is necessary if the excitor retains sight, even in very moderate degree. Then it is not justifiable to operate for its removal, because in the end it may be the eye which will retain the more useful vision, or, in other words, the treatment of the original injury may result in the preservation of vision, perhaps even useful vision, while the sympathetic disease may terminate in blindness.

Let me repeat some rules to you which cover the ground as well as it is possible to do so, with reference to the various problems that may be presented in the treatment of sympathetic ophthalmitis and your relations as surgeons to the case. Bear in mind that I speak of ophthalmitis now, not of the disease which I described in connection with the first case. These rules are quoted from those which are given by Mr. Swanzy, because I think they are clear, to the point, and represent the published experiences of the best authorities.

You should perform enucleation, or one of its substitutes, on,—

- (1) An eye with a wound which involves the ciliary region to such an extent that sight is immediately destroyed, or that its ultimate destruction by the process of inflammation is practically certain.
- (2) An eye which has been wounded in the dangerous region, and in which severe inflammation of the iris or ciliary body has already begun, even if sight is not destroyed.
- (3) An eye which contains a foreign body which judicious efforts have failed to extract, and when much iritis is present, even if sight is not destroyed.

These three rules, you will observe, apply to preventive enucleation,—that is to say, the operation is performed in order to check sympathetic disease.

Now let me quote you two which should be your guide, provided the sympathetic disease has already begun, as in the case which we have been considering.

- 1. You should perform enucleation, or one of its substitutes, on an eye whose sight has been destroyed, even though sympathetic inflammation has begun in the sympathizing eye, because by this means you remove a source of irritation and hope to render the treatment of the sound eye more effectual.
  - 2. You should not perform enucleation, or one

<sup>\*</sup> The iritis steadily improved, and one month after operation there has been no relapse, the eye being white and quiet.

of its substitutes, on an eye which has been injured, but which retains some vision, when sympathetic inflammation has begun in the sympathizing eye, because in the end it may prove to be the more useful organ.

Under the last-named circumstances you must employ the medicinal treatment suited to the excitor, as well as that needed by the sympathizer. Generally this treatment consists in the frequent instillation of atropine, local bloodletting, and, if the patient is sufficiently robust, the use of mercury in some form, preferably, I think, protiodide by the mouth, or inunctions. to the point of tolerance, but not to that of salivation, tonic doses of quinine, and concentrated, nourishing food. The light should be excluded, if necessary with a bandage, but there is no objection to the patient having proper exercise, which usually may be given in the room to which he is almost of necessity confined. Should this not be practicable, he may be taken out with eyes properly protected with bandages.

Of course you understand it is possible to give only a general outline of the treatment; in the details you must be guided by circumstances surrounding each case. At some future lecture I will point out to you the treatment of scleral wounds and the great advances which have been made in the management of badlyinjured eyes, even with penetrating wounds of a serious nature and trenching upon the ciliary region, or actually passing through it. Time does not permit me to do so to-day. I must, however, refer to one treatment of sympathetic ophthalmitis, which has, perhaps, not had sufficient trial to take its station among the best-recognized surgical procedures, and yet which has much to commend it and has been advocated by surgeons of great experience and sound judgment. I refer to injections of antiseptic solutions into the sympathizing eye. Abadie and several other French and also Italian surgeons have published cases where marked improvement occurred by injecting two to five drops of a strong solution of the bichloride of mercury into the vitreous chamber; for example, in one recently reported case of stubborn sympathetic irido-cyclitis the strength of the solution was 1 to 500. The injection was twice repeated, and good results are recorded. Recently, in England, Mr. Berry and one of his assistants have undertaken a series of experiments to prove the tolerance of the vitreous humor to various types of injection, and their results seem to show that aqua chlorinata was the most acceptable. At present, Dr. Hare and myself are engaged in a similar series of experiments in the Laboratory of Experimental Ther-

apeutics, because the exact therapeutic relation of these fluids, when introduced into the eye, to a microbic disease, and especially the relation of the chemical composition of the vitreous to that of the fluid injected, are points that require considerable elaboration.

Finally, gentlemen, I do not wish to close this talk without in my last sentences emphasizing one point,-namely, that while sympathetic inflammation may be preceded by symptoms more or less analogous to those which I described as a neurosis, this is by no means always, nor, indeed, is it commonly the case, and therefore a sympathetic irido-cyclitis, serous iritis, or choroido-retinitis may arise insidiously, practically without warning, and the lesions become pronounced before the gravity of the situation is appreciated. Nowhere more than in this disease does the law of preventive surgery apply. An incubation period, varying from three to six weeks, is common, but recollect that the disease may develop sooner or may be delayed for a long time. From the day on which the conditions arise that are liable to cause sympathetic ophthalmitis until they are removed the patient is not safe from this grave malady.

#### TIN-POISONING.

READ BEFORE THE EL PASO COUNTY MEDICAL SOCIETY, JANUARY 10, 1893.

By W. A. CAMPBELL, M.D., COLORADO SPRINGS, COL.

THE cases that form the basis of this paper occurred in my practice some time ago. Their rarity justifies me in presenting them to you to-night. I will first outline the cases to you, and comment on them farther on.

CASE I.—I was called at 3 A.M. October 19 to go several miles into the country to see a little girl two years of age. She was said to be in a critical condition. When I arrived at the house I found that my little patient was dead. The doctor in attendance (an eclectic) said she had cholera infantum. Her parents stated that she had suffered intense pains in the abdomen, accompanied by vomiting of the contents of the stomach and biliary matter. She also had a profuse diarrhœa. The alvine evacuations were quite offensive in odor and streaked with blood. The evacuations were attended with tormina and tenesmus. The stools contained round worms (Ascaris lumbricoides) in great The child very rapidly lost strength, numbers. and died in a state of collapse. Previous to this attack she was quite healthy.

Case II.—While at the house on October 19, I was asked to examine and take charge of

-, aged five years, brother of the George little girl. He had been sick for about one week; had had vomiting and diarrhœa. diarrhœa had now assumed a dysenteric type. He had as many as thirty stools during the twenty-four hours. Stools contained many His condition at this Ascaris lumbricoides. time was as follows: Pulse, 125; temperature, 103° F.; respiration, 25; tongue pointed and red; pain in bowels; very tender on palpation; tympanitic; wants to eat, but suffers pain in stomach on taking food. Evacuations from bowels of a bloody, stringy, mucoid character, and very offensive and putrescent. After twenty-four hours the stools were fewer in number and the tenesmus was lessened. Hemorrhoids appeared, which were painful and protruded on defecating. By the 22d of October his condition was considerably improved. The stools were but few in number and had lost their putrescent odor. But little abdominal tenderness, and can take food (milk) with less pain. From this date he gradually improved. There was blood in stools until the 24th. The attacks of pain in the umbilical region continued until the 28th of October. His temperature was above normal but three days after I first saw him. He made a good recovery.

CASE III.—On October 20 my attention was called to Marion —, another brother. He was ten years old. He had commenced to complain with diarrhea and dysenteric symptoms after my departure on the previous day; has mucoid, bloody evacuations from bowels; has no fever; pulse rapid; complains of no pain; slight tenderness in umbilical region; is not sick enough to go to bed; has had from twelve to fifteen passages from bowels in past twenty-four hours. On the third day of attack he passed quite a number of Oxyuris vermicularis. In five days he was convalescent.

CASE IV.—Ida ——, nine months of age, was taken, on the evening of October 22, with diarrhoea. On the morning of the 23d her condition was as follows: Pulse, 148; temperature, 104° F.; respiration, 40; restless and nervous; nurses but little; pupils dilated and do not respond readily to the light; abdominal tenderness; stool about every half-hour, which was watery, bloody, and mucoid, small in quantity. From the time treatment was instituted symptoms were for the better. The temperature did not reach normal until the 26th of October. There was blood in the stools until the 28th. Made a good recovery.

Case V.—On the 24th of October, Laura——, aged nine months (twin sister of Case IV.), was found in the following condition: Pulse, 120;

temperature, 102° F.; respiration, 28; diarrhoea; evacuation every hour of a watery, bloody, mucous character, not profuse or very offensive; tenderness over abdomen; nurses well and sleeps well. From this date on she gradually improved. Temperature fell to normal on the 26th. Blood in the stools continued until the 28th. She made a good recovery.

CASE VI.—John W., aged forty-eight, father of the family, commenced complaining to-day (October 24) with pain in the bowels and general malaise; has several ulcers over hard palate and pillars of the fauces; no diarrhœa. On the following day had a pharyngitis and pain through thorax on course of œsophagus; tenderness over pylorus; tongue pointed and red; has a rise in temperature of two degrees; pulse, 100. On the 26th his symptoms were the same. He passed quite a number of Oxyuris vermicularis. By the 28th his condition was improving, and it was but a short time until he was again at work.

The treatment of these several cases was entirely symptomatic,—astringent, demulcent, anodyne, or stimulating, as the symptoms indicated. The diet was milk.

If I should terminate my paper here, you would perhaps be as much at a loss to account for the symptoms in the above-outlined cases as I was during the first few days. Here were six cases of a gastro-intestinal disorder occurring in one family in a period of twelve days, with one death. What was the origin of the disease? What was its character? The character of the alvine dejections led me to believe the trouble was dysenteric. I examined the The well was on a ridge, with ground sloping away from it. There was no other dwelling within one-half mile. vault was on the slope below the well and some distance from it. Although I could find no source of contamination, I ordered them to discontinue the use of the water and carry all drinking-water from the neighbors, which they did. When the infants were taken with the same symptoms, and I was told they had not used anything to drink except milk, my search was directed to the food of the family.

I made strict inquiry into every article of food they had used for two weeks prior to my being called. Among the food products, and the one that aroused my suspicions, were tomatoes, and the mother informed me that the child that died was very fond of them, and had eaten heartily of them before getting sick. Further, the mother stated that one child (eight years) and herself were not fond of tomatoes, and had eaten none. Neither of them had a symp-

tom of the disease. The following is a history of the tomatoes: They were canned during the tomato season in cans that had contained peaches. Being sealed with wax on a flat surface, they would not remain tightly closed. They had been heated again and sealed for a third time. "Getting out of patience," as the mother expressed it, "because they would not keep, I concluded if we could not keep them in one way we could in another, so we would eat them." One can of the tomatoes still remained untouched. These had been heated in company with those that had been eaten. and hence would contain the same chemical constituents. I secured this one and took it to a chemist, Dr. E. H. Allison, and asked that he test it for lead, tin, and arsenic. He reported that he found tin in comparatively large quantities and a small amount of lead. He did not make a quantitative analysis.

It is much easier to view cases retrospectively, and agree upon their diagnoses, than it is to determine fully upon the etiology and diagnosis of the case in the beginning or during the progress of the disease. The prevalence of dysenteric troubles in this section at this season of the year, the systemic disturbances of these cases, indicated by the pulse, temperature, and debility, the character of the evacuations accompanied with tormina and tenesmus, and the want of suspicion of any metallic poisoning, at once suggested dysentery as the disease.

It might be suggested that the cause of these symptoms after the ingestion of the tomatoes was due to the existence of a ptomaine. It is true that the symptoms very closely simulate those due to poisoning from ptomaines, and were the cause wanting to account for the symptoms, we might take them into consideration. In these cases I do not consider it necessary to look further than the detection of large quantities of tin in these tomatoes for the cause.

We will leave it to the chemist to determine what salt of tin we had in these tomatoes, whether it was the mallate, acetate, tartrate, or chloride of tin, due to the action of these respective acids on the tin, or from an acid of fermentation. It is evident that the repeated opening of the cans played an important rôle in the formation of the salt of tin.

It is an undisputed fact that canned foods frequently contain tin, but the quantity is so small that no deleterious results follow. Walter Blyth ("Reference Hand-Book") states that he "found in some samples of canned fruit as much as 14.3 grains of stannous hydrate to the pound, and that the average amount in all examined was 5.2 grains per pound."

It has been urged that were there sufficient tin salts in the food to be deleterious, it would be unpalatable, and hence would not be eaten. Perhaps this is true in most cases. But it must be remembered that the general practitioner comes in contact with all classes of patients, the poor and the parsimonious rich, as well as the generous liver; hence it is well for us to be on the alert for this source of danger.

"There is now sufficient evidence to show that tin compounds are poisonous, locally and constitutionally. Having already proved experimentally that tin may be absorbed, and afterwards found in the tissues and urine, Ungar and Bodlander lately investigated the influence of tin on health. They used for their experiments frogs, rabbits, and dogs, introducing, partly by the stomach and partly subcutaneously, stannous chloride, the tartrate of tin and sodium, and the acetate of tin triethyl. They found that even the non-corrosive salts of tin, when thus introduced, caused toxic symptoms, ending in death. The results of repeating very small doses for some time were like those of other metals which gradually undermine the health, sometimes even causing death" (Annual Univer. Med. Sciences, 1888).

As a therapeutic agent, tin is obsolete. Stanni pulvis was an officinal preparation in the U. S. Pharmacopœia prior to 1850. It was classified as an anthelmintic, and was thought to act in a mechanical manner.

From the study of these cases I would come to the following conclusions:

- 1. Stannous salts are poisonous to the human system, being similar in their action to the other mineral poisons,—lead, zinc, arsenic, antimony, etc.
- 2. The salts of tin are anthelmintic as well as the powdered product.
- 3. Toxic doses of the salts produce symptoms similar to those from ptomaines.
- 4. Canned-food products may contain stannous salts in poisonous quantities.
- 5. The danger from this source is increased from exposure to the air; hence all fruits should be emptied from tin cans as soon as opened.

#### THE TREATMENT OF GONORRHOEA.

BY H. M. CHRISTIAN, M.D., Chief of Genito-Urinary Clinic, University of Pennsylvania, service of Dr. Edward Martin.

THE commonly-recognized treatment of gonorrhæa, described in text-books on venereal disease, and taught in our medical schools, consists in the administration of alka-

line diuretics in the first stage of the disease, followed by mild injections during the stationary period, and the employment during the subsiding period of balsamic remedies internally, together with the use of strong injections.

Up to a comparatively recent time this was the line of treatment pursued at the Dispensary for Genito-Urinary Diseases, of the University Hospital.

Patients appearing in the first week of the disease were put upon a restricted diet, and were given internally some alkaline diuretic, either acetate of potassium or bicarbonate of sodium. By far the great majority of the patients, upon their first visit to the dispensary, were found to be in the stationary period of the disease, and these were at once put upon the use of some one of the many injections employed in the dispensary, those chiefly used being either a solution of nitrate of silver (1 to 3000) or one containing subcarbonate of bismuth and hydrastis (colorless). In addition to the use of this injection, some one of the balsamic remedies-either copaiba or sandal-wood—was given internally. In the subsiding period, stronger injections, containing lead and zinc, were employed.

Under this treatment the great majority of the cases were cured in from four to six weeks, no case being considered as cured unless there was a continued absence of the morning drop, and the urine, on examination, was found to contain no "clap" shreds.

The two most frequent and troublesome complications were (1) posterior urethritis,—
i.e., extension of the disease backward into the posterior urethra,—improperly called cystitis of the neck of the bladder, and (2) epididymitis.

In one hundred and fifty cases of gonorrhœa treated in the manner just described, eighty-five were cured without the occurrence of either of these complications. In fifty-two of the cases posterior urethritis developed, and the injection had to be discontinued for a time. Epididymitis occurred in thirteen of the cases.

In the fall of 1891 it was determined to pursue a totally different line of treatment, and the method of cure adopted at that time is still in use in the dispensary. All patients with acute gonorrhæa are now put upon the internal use of balsamics at their first visit to the dispensary, and these are kept up in increasing or diminishing doses until the end of the third or fourth week. No injections whatever are used until the subsiding period of the disease,—i.e., about the end of the third week,—when the discharge is thin and mucoid in character,

with a tendency to glue the lips of the meatus together in the mornings.

In one hundred and fifty cases of acute gonorrhea treated in this manner, one hundred and thirty-four pursued the regular course of the disease uncomplicated with either posterior urethritis or swelled testicle. In only twelve of the cases were there any symptoms of posterior urethritis, and epididymitis occurred in only four

Summary of both Methods of Treatment.— Number of cases of acute gonorrhoea treated by injections at a comparatively early period of the disease, 150; uncomplicated with posterior urethritis or epididymitis, 85; developing posterior urethritis, 52; developing epididymitis, 13.

Acute gonorrhoea treated without injections till the subsidiary stage was well developed, 150; uncomplicated with posterior urethritis or epididymitis, 134; developing posterior urethritis, 12; developing epididymitis, 4.

After a comparison of the results obtained by these two methods of treatment, it would seem that there is but one conclusion to be drawn,—namely, that the use of injections, prior to the subsiding stage of acute gonorrhea, acts, in quite a large proportion of the cases, as an exciting cause in the production of posterior urethritis and epididymitis, and on this account is not to be considered as the best treatment of the disease.

All patients at the venereal dispensary of the University Hospital are now put upon the internal use of a capsule, made by Parke, Davis & Co., containing five (5) drops of oil of sandalwood and five drops of oil of copaiba, with one drop of oil of cinnamon. From four to eight of these are taken daily for the first three weeks.

When the "morning drop" persists, an injection of sulphocarbolate of zinc and hydrastis is used.

It is not claimed for this plan of treatment that it in any way cuts short the duration of the disease, but only that it aids in preventing the frequent occurrence of posterior urethritis and epididymitis, the two most troublesome complications of gonorrhœa.

THE DETECTION OF LEAD IN URINE.

By LEE K. FRANKEL, Ph.D.

DURING the winter of 1891-92 the author, while investigating some cases of supposed lead-poisoning, had occasion to require a method whereby lead could be accurately and, what was

of equal importance, rapidly detected in the urine. As far as accuracy was concerned, the methods recommended by Victor Lehmann (Zeitschrift für Physiologische Chemie, vi. 1) were found to be thoroughly satisfactory, but it was hoped that a modification of his electrolytic method could be devised which would shorten the time limit of the process. Unfortunately, the desired end was not attained, since the results are altogether of a negative order. These, however, show a sufficiency of new and interesting data to warrant their publication.

In the article above referred to, Lehmann states that lead may be detected electrolytically in urine, either with or without previous destruction of the organic matter present there. The best results are given when the organic matter is first destroyed. He uses in his investigations the apparatus devised by Bloxam (Chemical Society Quarterly Journal, xiii. 12) for the electrolytic detection of arsenic. apparatus consists essentially of a jar, which is closed below with parchment, and in which the solution to be examined is placed. The jar stands in an outer vessel which contains sulphuric acid. In Lehmann's apparatus, the platinum electrode which is attached to the negative pole of the battery dips in the outer vessel, while that attached to the positive pole enters the jar. He states that with such an arrangement the lead present in the urine deposits as peroxide on the positive pole.

To ascertain how minute the quantity of lead in a solution might be, and still show as peroxide when the solution was electrolyzed, the author made the following determinations: In a platinum dish, connected with the negative pole of a battery, 100 cubic centimetres of water and I cubic centimetre of a lead-nitrate solution were placed. To these 3 cubic centimetres of concentrated nitric acid were added. The positive electrode was now introduced directly into the solution, and the latter electrolyzed with a current generating 1.4 cubic centimetres of oxyhydrogen gas per minute. At the end of thirty minutes the deposit of peroxide of lead on the platinum foil was already very distinct, and at the end of several hours had the usual dark-brown appearance of the leadperoxide deposit. The lead-nitrate solution used was of such a strength that in the solution finally electrolyzed 1 part of lead was present in every 100,000 parts of water.

Two more experiments were made with solutions containing r part of lead to 500,000 and 1,000,000 parts of water respectively, the amounts of nitric acid and the strength of current being the same as in the preceding experiment. The deposits of lead peroxide on the platinum foil, while very faint, were still distinctly recognizable.

The delicacy of this electrolytic test led the author to hope that the presence of urine would not materially interfere with the deposition of the peroxide of lead. The following experiments will, however, show that the results obtained were radically different from those which were anticipated from the above action of the lead solution.

To 100 cubic centimetres of urine 1 cubic centimetre of a lead-nitrate solution (containing 1 milligramme of lead) and 10 cubic centimetres of concentrated nitric acid were added. The solution was put into a platinum dish and electrolyzed for twenty-four hours with a current generating 1.4 cubic centimetres of oxyhydrogen gas per minute. At the expiration of that time, to the author's surprise, no peroxide of lead had deposited on the positive electrode. The current was then allowed to act forty-eight hours longer. Even then no deposition was noticeable on the positive pole, but on the platinum dish (the negative electrode) a metallic deposit resembling lead had formed. The quantity of the deposit, however, was so small that it did not respond to the ordinary tests for lead.

130 cubic centimetres of urine and 2 cubic centimetres of the lead-nitrate solution, the free nitric acid in this case being omitted, were similarly electrolyzed, with the difference that in this determination the platinum dish was made the positive electrode and the platinum foil the negative electrode. After electrolyzing for twenty-four hours with the same strength of current as before, a grayish-brown, spongy deposit was found on the platinum foil. This was carefully washed with water, dissolved in nitric acid, and the solution evaporated to dryness. On dissolving the residue in hydrochloric acid, and passing hydrogen sulphide gas through the solution, the characteristic reaction for lead was given. No deposit was found on the positive pole. The experiment was repeated, using varying amounts of the leadnitrate solution, and in every case was a similar deposit found on the negative electrode, which gave the confirmatory reactions for lead. At no time was a deposit found on the platinum dish,—the positive electrode.

While these results were satisfactory for the detection of lead in urine to which a lead solution was directly added, results entirely different were obtained with urine in which the lead that was present had been previously assimi-

lated by the system. Fortunately, for this purpose it was not necessary to inject animals with a lead solution, as the urine from several cases of acute lead-poisoning (both before and after treatment with potassium iodide) was placed at the author's disposal by the officers of the University Hospital. In all the samples of urine (some twenty-five in all) that were examined for lead by the electrolytic method just given, both with and without the presence of nitric acid, in no case was a deposit found on either the positive or negative pole sufficiently large to give a confirmatory reaction for lead on dissolving the deposit in nitric acid, evaporating the solution to dryness with hydrochloric acid. and then adding hydrogen sulphide. In one or two cases the current was allowed to run for five days, and increased to 3 cubic centimetres of oxyhydrogen gas per minute. idizing action of the current was so strong that at the end of this time the scum and mucus which separated on the surface of the solution during the earlier passage of the current had entirely disappeared. Even then no deposit was found either on the dish or on the foil that would react for lead. That lead was present in these samples of urine was proved by taking the solutions on which the current had no effect, and rapidly oxidizing the organic matter present with potassium chlorate and hydrochloric acid. When the solution had become colorless, the excess of hydrochloric acid was evaporated, and hydrogen sulphide gas passed into the solution. The precipitates that were thus obtained were redissolved in nitric acid, and further tested for lead with sulphuric acid and potassium chromate. Every sample of urine examined in this manner showed the presence of lead.

These results are of interest, since they show that lead salts passed through the system are, by the time they become components of the urine, of such a composition that they cannot be decomposed by any but the strongest reagents. In the cases cited the lead is probably in combination with the organic acids present in the urine, and in such a stable form that a current of the strength used is not sufficient to break up this combination into its constituents.

For detecting lead in urine, the author has invariably obtained good results by first oxidizing the organic matter with potassium chlorate and hydrochloric acid. If desirable, the lead can then be determined electrolytically, as advised by Lehmann. This method, however, is time-consuming. The test for lead with hydrogen sulphide is not alone rapid, but

so delicate that preference would be given to it, particularly where the amounts of lead present are small.

CHEMICAL LABORATORY,
UNIVERSITY OF PENNSYLVANIA.

A SIMPLE METHOD OF EVACUATION AP-PLICABLE TO THE TREATMENT OF PYOSALPINGITIS AND COL-LECTIONS OF FLUID IN THE CAVITY OF THE PELVIS.

VULLIET (Revue Médico-Chirurgicale des Maladies des Femmes, November, 1892) states that for a long time he was in the habit of treating all cases of pelvic suppuration by hysterectomy, but within the last two years he has operated by a simple method in eighteen cases. Paracentesis forms the basis of the author's treat-

The technique of the operation is as follows: The same antiseptic details are to be carried out as for laparotomy or hysterectomy. The patient should be placed in the sacro-dorsal position, the operator standing on the side corresponding to that of puncture. The leg of that side should be placed over the shoulder of the operator, so as to incline the pelvis to the opposite side; then by the combined examination the region of suppuration is mapped out. If discovered, the assistant should place his hand on the abdominal wall over the abscess and make downward pressure, and at the same time takes his turn at holding the leg of the patient upon his shoulder. A trocar is then plunged into the abscess cavity and the pus drawn off. The assistant still continues the abdominal compression, so that all the pus may be evacuated. To be certain that all the fluid has been drawn off, a puncture should be made at another point. If, in the course of ten or twelve days, the liquid is reproduced, the trocar is again used, the liquid drawn off, and the cavity washed out with five or ten cubic centimetres of sublimate solution (1 to 1000).

If the liquid should still be reproduced a third or fourth time, the cavity should be incised and tamponed with iodoform gauze.

Of the eighteen cases, only three required incision and drainage; all the cases, however, recovered.

Concurrent with the operative treatment, active antiphlogistic and resolvent treatment should be employed.

The author does not believe in tamponing the uterus for the purpose of draining the tubes.

### The Therapeutic Gazette

EDITED BY
H. A. HARE, M.D.,
GENERAL THERAPEUTICS.

With special departments under the charge of G. E. DE SCHWEINITZ, M.D., OPHTHALMIC AND AURAL THERAPSUTICS,

AND
EDWARD MARTIN, M.D.,
SURGICAL AND GENITO-URINARY THERAPEUTICS

#### GEO. S. DAVIS.

Medical Publisher, Box 470,

THERAPEUTIC GAZETTE with AGE and LANCET... 4.00
Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136
Gower Street, London. Price ros. Remittances may be made either by Postal Order or Stamps.

THERAPEUTIC GAZETTE with AMERICAN LANCET 3.25

Price to Foreign Subscribers direct (postage included), \$2.50 (roshillings). English postage-stamps received on remittances.

Editorial communications should be addressed 222 South Fifteenth Street, Philadelphia. Articles intended for the Original Department of the Gazerra will be accepted only with the understanding that they are contributed to it exclusively.

Authors will receive reprints in pamphlet form, without charge, provided the request for them be written on the articles sent.

Business communications should be addressed to the Publishers.

### Leading Articles.

### HOMATROPINE FOR THE CORRECTION OF ERRORS OF REFRACTION.

VER since homatropine was introduced to the profession, its value as a paralyzant of the ciliary muscle, and consequently its value as a revealer of the whole error of refraction, has been occasionally questioned. If a vote were taken among the practical ophthalmologists who have employed this drug for the purposes stated above, those who have trust in its virtues would probably be found in the majority; but nevertheless the query, Does homatropine, as generally used, reveal the whole error of refraction? remains to a certain extent unanswered, and there can be no doubt that Dr. W. Franklin Coleman, who discusses the subject in the Annals of Ophthalmology and Otology for January, 1893, is correct when he states, "The opposite answers of equally competent, observers are evidence that the above question is unsettled."

It is difficult to understand why there has been so much diversity of opinion, not only among those who have given the experience of their consulting-rooms and of their practical work in the estimation of errors of refraction, but also among those who have with the utmost care tabulated their cases and compared the results of homatropine with atropine, or with other of the stronger mydriatics. testimony of Risley, Jackson, Randall, Ayres, Hotz, and numerous other ophthalmic surgeons is so positive in regard to the efficiency of this mydriatic, and their accuracy as observers so unquestioned, that the reasons for the discrepancies are not at once apparent, especially when antagonism to homatropine is championed by Oliver, Holt, Coleman, and others, who have carried out researches similar to those which seem to prove the undoubted value of the drug.

There is something suggestive in the title which Dr. Coleman uses: "Does homatropine, as generally used, reveal the whole error of refraction?" Perhaps as "generally used" it is unsatisfactory, and we may believe with Dr. Jackson that those who use homatropine and find it unsatisfactory, use it in a different way from those who find it satisfactory. It is, of course, not possible to know how each ophthalmic surgeon uses this mydriatic, but as Dr. Coleman particularly states that he followed the plan advocated by Dr. Jackson, and still was disappointed, it cannot with propriety be said that his method was other than that which those who advocate the drug have found efficient.

Certainly only one method yields accurate results,—namely, cumulative instillations of the drug, or, in other words, repeated instillations at short intervals. In patients over twenty years of age, with the exception of the cases of spasm of accommodation and of certain examples where the ophthalmoscope reveals pronounced retino-choroidal irritation, the result of long-continued eye-strain, the following plan of administering the drug has proved eminently satisfactory in hundreds of cases. A neutral solution of one grain to the drachm is procured, of which one drop is instilled into each eye on retiring the night before the day on which the examination is to be The next morning one minim of the same solution is dropped into each conjunctival sac every fifteen minutes for an hour and a half, and forty-five minutes after the last morning instillation is made the patient is

placed before the test-types and the refraction tested in the usual way. At the close of the examination another instillation is made, and the examination repeated at the end of another forty-five minutes. This is practically the method of examination which Jackson has advocated, and was also that employed in a study of the physiological action of the drug recorded in the *Medical News*, December 24, 1887. The results of this research were exactly in accord with those which had previously been reached by Jackson, Risley, Randall, and the other observers who had found the drug efficient.

Three points in this method deserve emphasis: First, that a drop shall be put into each eye at bedtime on the night before the measurement is to be made. This quiets the accommodation to a certain extent, and permits the repeated instillations on the following morning more certainly to paralyze the action of the ciliary muscle. Second, that the directions in regard to the repeated instillations shall be accurately followed, and to secure this it is wise for the surgeon himself to instil the drug. Third, that the trial of the refractive error shall be made not before forty-five minutes have elapsed, and not later than sixty minutes after the last instillation.

There is no doubt that these cumulative instillations produce some smarting of the conjunctiva, and often distinct injection of the posterior conjunctival vessels, although much of this irritation may be avoided, as Oliver has pointed out, by securing a perfectly neutral A slight gray haze has been described in the fundus oculi, and the choroid is said to become woolly under the influence of these instillations; but changes of this character in the eye-ground are so readily seen or not seen, according to circumstances, or perhaps we had better say, are so certainly seen after the pupil is dilated, while they may have escaped attention before mydriasis, that their exact relation to the use of the drug is not definitely ascertained. Even admitting their presence, which seems undoubted in some instances, so far as we have been able to ascertain, save in the exceptions already quoted, they are of no moment; they do not interfere with the determination of refractive error, and invariably disappear by the time the effects of the drug have subsided.

No doubt, as Dr. Coleman says, it is at present impossible to reconcile the various discrepancies, but we cannot help believing that these depend in some way upon differences in the method of employing the drug. It is quite

possible also that we do not always obtain homatropine of a standard quality. The recent capital observations of Risley in regard to hyoscyamine in this respect are worthy of repetition with reference to the hydrobromate of homatropine.

### THE USE OF ACONITE IN VARIOUS FORMS OF CARDIAC DISORDER.

BY far the larger number of patients coming into the physician's office with the belief that they are suffering with heart-disease, are in reality subjects of functional disorder of this organ, produced by over-indulgence in tobacco, alcohol, or other habits, or by excessive exercise followed by excessive rest; or, finally, by disorders of the digestive apparatus.

Very few of those who really have organic cardiac disease appreciate that such lesions exist in their bodies, unless they have been told so by competent physicians, and nothing is more common than to find that the patient has attributed symptoms in other portions of his body to local disorders, whereas in reality an examination of the heart, which he believes to be healthy, shows the physician that the trouble lies in this organ.

Putting to one side the well-known fact that the mere existence of valvular disease of the heart does not indicate digitalis unless there are evidences of lack of power and hypertrophy, let us consider for a moment the value of aconite both in functional and organic cardiac disease. We will not speak of its employment in the acute diseases of the endo- or myocardium.

Those who are in the habit of seeing young men will constantly have their attention called to the condition of shortness of breath on exertion, palpitation or violent pulsation of the heart, and in some instances the development of severe symptoms which, at first glance, may seem to be those of true angina pectoris. In many of these youths there will be a history of the excessive use of tobacco, or that they have left college, where they have been indulging in severe athletic exercise, such as running or bicycle-racing, and have gone into business where they lead a most sedentary life. In these cases the condition which exists is comparable to the condition which exists in a steamer whose engines are too strong for her. The heart, which has heretofore been supplying the body of an athlete with blood, now finds itself too strong for the sedentary individual, and the symptoms

seems to be peculiarly fitted as a culture-ground for these germs.

The local treatment consists in repeated irrigation of the inflamed region with warm antiseptic lotions, such as nitrate of silver 1 to 10,000, or corrosive sublimate 1 to 10,000. These irrigations should be copious and should be repeated twice a day. The vagina may be washed out by means of a soft, small rubber catheter inserted within the orifice of the hymen. The labia are gently dusted with very finely powdered zinc oxide, and are kept from coming in contact with each other by means of pledgets of absorbent cotton. It is safe to make no direct application to the urethra at first. In the subsiding stage this canal may be flushed out by means of a very small, soft rubber catheter.

### Reports on Therapeutic Progress.

### PATHOLOGY AND THERAPEUTICS OF DIABETES MELLITUS.

G. KLEMPERER (Wiener Medisinische Blätter, No. 28, 1892) gives an interesting review of the latest attempts to solve the pathology of this severe and obscure disease. The question what causes the abnormal amount of sugar seems to admit of but two answers. Either more sugar is formed or too little sugar is destroyed. What causes this formation, or diminished destruction, or by what means shall it be counteracted? He himself appears to reach no positive conclusion.

After going over the remedies usually prescribed,-opium, the salicylates, antipyrin, phenacetin, and the alkalies,-he dwells at length upon a suitable diet for diabetes. He thinks the mild and severe forms should be distinguished, regarding as mild forms cases in which the glycosuria disappears when the carbohydrates have been withdrawn for three days. But the most important thing is to see to it that the patient gets sufficient food. He needs at least two thousand "calories," and one gramme of albumin, or one gramme of carbohydrates and 'four of fat, each correspond to one "calorie." The mild cases are to be kept months at a time without sugar, but such carbohydrates as mannite, levulose, Iceland moss, etc., may be used.

Absence of all excitement is very important, while for those with sufficient strength, exercise is very wholesome, although it must be used with caution and not practised to the point of exhaustion.

CRYSTALS UPON THE SKIN, FOLLOWING THE USE OF SALOPHEN.

Crystalline deposits upon the skin, following more or less profuse perspiration, have only been seen in cholera typhoid; but DR. DRASCHE (Wiener Medizinische Wochenschrift, No. 29, 1892) gives a brief account of their appearance after the use of salophen. In using salophen, there is often a profuse perspiration which leaves behind it, after evaporating less than half an hour, a quantity of small, graceful, pointed crystals. They glimmer and flicker and glisten, in a good light, until some parts of the skin appear to be sprinkled with diamonddust. Besides, the folds at the elbows and interphalangeal joints, the palm of the hand and the creases of the neck, especially in stout people, are filled with a white, shining substance, resembling asbestos. Although these deposits of crystals may be observed on all parts of the body, they are especially marked on the face, neck, breast, and both sides of the upper and lower extremities. They are found in smaller numbers in places more exposed to rubbing, as the back. They are seen best in a strong oblique illumination.

In all cases where perspiration has followed small or large doses (1/2 to 21/4 drachms per day) of salophen there also occurs this crystalline deposit upon the skin. As' it always follows like doses, nothing can be said of cumulative effects. These tiny crystals can be gathered best with a thin, small knife-blade, and then they should be placed under the microscope upon a slide without any cover-glass. microscope shows them to be almost of the same form as the salophen crystals. chemical nature has not yet been fully determined, on account of the difficulty in obtaining a sufficient quantity for examination. Probably these crystals are salophen itself or a product of its subdivision.

### TREATMENT OF SCROFULA WITH CREOSOTE.

DR. JULIUS SOMMERBRODT (Berliner Klinische Wochenschrift, No. 26, 1892) warmly urges the use of creosote for scrofula. He has given it repeatedly where there were great gland bunches on the throat, and seen these very stubborn swellings grow smaller or disappear. Knowing that the earlier creosote is used for tuberculosis the better the results obtained, he has been specially zealous in giving it to children with scrofula. His results have been so satisfactory that he cannot commend it too highly. None of his patients have been under

seven years of age, but Sommerbrodt believes it could also be given pure to younger children without the addition of milk or wine, especially if the dose was made I drop three times a day to begin with, and then gradually increased until 7½ to 10½ grains daily had been reached. For children of seven years and upward it is easy to reach 15 grains daily, in from eight to ten days, either in drops or in capsules holding 1 1/2 drops of creosote with cod-liver oil (not with balsam of tolu). An increase over 15 grains a day is seldom necessary, but could be used without scruple, if necessary. Creosote should always be given immediately after the three meals, as the empty stomach will not tolerate it, and the treatment with creosote must be continued during many months beyond the apparent cure.

Sommerbrodt's experience has been with scrofulous children who had no other treatment but the creosote; but, of course, the value would be just so much greater if used along with salt baths, a sojourn by the sea or in the country, the use of iodide of iron, or surgical measures. He believes that too small doses are valueless, and that large ones are not dangerous. Only very recently has the first case of poisoning from creosote been reported. This was a patient of Dr. Freudenthal, who had been treated with it for months with benefit, who took 2 to 21/2 drachms of creosote in fluid form within two hours. The woman recovered after nine hours and had no further ill effects, although the creosote treatment was continued.

Sommerbrodt gave creosote to one patient, thirty years of age, gradually increasing the dose from 15 grains a day to 2 drachms daily in capsules, with cod-liver oil, during months. He had an excellent appetite, and his general condition continued good, while a good influence was exerted upon the local tubercular process in the lungs and larynx, and thirty pounds added to the weight.

Dr. Ziemssen reports satisfactory results from creosote as used in his clinic. His average dose was 3/4 drachm daily.

## THE TREATMENT OF ACUTE DYSENTERY BY ANTISEPTIC RECTAL AND COLON IRRIGATION.

Apropos of the article of Dr. Ball, published in the July and August numbers of the Therapeutic Gazette, the following article by Dr. W. W. Johnston, in the American Journal of the Medical Sciences, of Washington, is of interest:

In the Edinburgh Journal of Medicine, in 1826, Dr. Joseph Kent, of Bladensburg, U.S.A., wrote that since 1823 he had employed icewater injections for dysentery at half-hour intervals, "speedily alleviating every distressing symptom." In 1848, Assistant Surgeon Withecomb, in a Calcutta medical journal, reported two cases successfully treated by high injections with a long tube. But it is to the published opinions of Drs. O'Beirne and Hare that special attention should be paid. O'Beirne, in an article on "New Views of the Process of Defecation" (Am. ed., Washington, 1834, p. 35), held that in dysentery "the chief curative indication should be to pass up the gum-elastic tube and introduce it into the sigmoid flexure, in order to give exit to the accumulated and pent-up contents of the cæcum and colon." In an appendix he writes, "Dysentery having reappeared in this city (Washington), I have had opportunities of trying my novel mode of treating the disease." One to four pints of warm water with castor or olive oil were thrown in; hardened fæces, mucus, and flatus were passed, with relief of the symptoms.

Hare used these words, full of meaning to us now: "The substance of the whole argument is this: The long tube changes a huge internal abscess into an external one, and enables us to wash out and cleanse from it its putrid contents. It also enables us to foment and soothe by local applications the sloughing and ulceration these contents have caused on its surface. . . . Dysentery in its primary nature . . . is a mild and harmless disease, and . . . therefore if we remove quickly these acrid secretions. we shall disarm dysentery of its terrors." He advises the physician not to cease repeating the injection until he is satisfied that the colon is evacuated and cleansed: it is as necessary to wash out the colon when its contents are liquid as when they are solid. "By passing an elastic tube beyond the sigmoid," he says, "I have found not the slightest difficulty in washing out the colon from cæcum to anus. . . . In treating three hundred and forty-six cases in Calcutta, I had but thirty-three per cent. of

In 1879, Cantani, after treating of rectal alimentation, speaks of disinfecting the colon in dysentery and other diseases by such drugs as carbolic acid, salicylate of sodium, borate of sodium, etc., and predicts a great future for this kind of treatment.

Two causes have co-operated to draw renewed attention to rectal and colon antisepsis, —one is the growing belief in the specific and contagious nature, with the recent discovery of the amœba of dysentery; the other is the dissatisfaction with other methods, and the effort to find in this disease a direct, rational, and successful treatment.

For three or four years past the journals have contained some favorable reports of this method. It will be noted, however, that few of them refer to irrigation; injection is the usual plan.

The latest communication is one that has been translated since the writing of this paper. It is by Dr. Korytin, a Russian. He refers to Dr. Strhogloo as having published, five years before, the results of his treatment of washing out the bowel with a five-per-cent. solution of carbolic acid. Sixteen cases are reported with excellent results. Dr. Kamper, in the same year, reported the same method in eighteen Korytin employed warm water or warm carbolized water. One tube only was used, and the fluid (six pounds) was allowed to remain in the intestine five to ten minutes, even fifteen to twenty minutes. One to three washings were generally sufficient; sometimes four to six were given; never more than one daily. Nine of the cases were severe (diphtheritic); six were milder (catarrhal). The improvements noted after the injections were: The number of the stools diminished; the frequent desire lessened; appetite, sleep, and the nervous state were all improved. The fæces became thicker, lost their foul smell, and the mucus, blood, and particles of waste tissue disappeared; the fever subsided. In the mild forms the results were happiest. In them tepid water had as good an effect as the carbolized warm water. The history of each case is given in detail, showing that the improvement followed immediately upon the washing of the rectum, and that relapses due to its suspension were arrested at once by a return to the treatment.

In one fatal case after irrigation the stools were from twenty to twenty-five daily; tormina and tenesmus lessened, but the patient grew weaker and died; gangrenous lesions in the bowel were found. In many of the cases internal medication was tried, proved ineffectual, and recourse was then had to the washing. The duration of the case after beginning the treatment was three, and in the most severe cases seven, days.

The strong arguments for the superior advantages of antiseptic irrigation are found in the complete and successful manner in which it answers to the pathological conditions of dysentery: an intense inflammation, seated in the rectum, sigmoid flexure, and colon, and always more intense here, even when the disease extends higher up, characterized by gangrenous

destruction of tissue and ulceration with decomposition, and accompanied and most probably due to bacterial multiplication. If these conditions existed outside the body there would be but one course followed,—the removal of the cause, if possible, then cleanliness and thorough antisepsis. Within the intestinal canal the typical treatment would be the removal of the cause or contributing cause, and cleanliness by thorough flushing of the bowel and antisepsis. There can be, there must be, but this one principle of treatment, and if the mechanical difficulties involved are removable, it must be the successful treatment.

There is one feature in dysentery to which separate attention should be drawn. It is this: The rectum and colon form a distensible cavity and are closed below by the sphincter. In dysentery this cavity, especially its saccular and most dilated lower portion, becomes the most distended, the most filled by the contents, which are composed of transuded serum, blood, decomposing shreds of tissue, and the results of digestion, the whole being in an active state of disintegration and filled with multiplying bacteria. The sphincter, as a result of neighboring inflammation and cedema, acquires great irritability, dilates frequently, but with irregular and spasmodic movement, and contracts quickly and violently, closing the orifice before the rectum is completely emptied. Thus the rectum becomes like an acutely-inflamed blad-A certain quantity of its contents is expelled; a residuum is always left. In some cases the amount is small; in others-bad cases with much fluid-it is large. The rectum is never emptied, but always contains some fluid in a state of active decomposition. In this condition, as in a distended bladder full of decomposing urine, the first indication is to empty the rectum, and the second to wash out the cavity and to keep it empty and clean.

If this statement is true, it has a most important bearing on the nature of dysenteric symptoms and on the kind of treatment which they require. Johnston has found no reference to the fact in any work on medicine or in any medical contribution on the subject, although, in the enormous mass of literature on dysentery, the failure to find such a reference might well be excused. That it is a fact has been demonstrated; and although it may not be an essential feature in all cases, yet in a large number, and those the most severe, it is a constant condition.

The patient whom we see straining at intervals of a few minutes in his violent efforts to empty the rectum, does not empty it, the very

intensity of the muscular contraction defeating this object. The sphincter shares in the irritability of all the rectal muscles, and closing spasmodically, shuts off the escape of the contents before the act is accomplished. The result is also in part brought about by the patient lying down while straining, and the more feeble from prolonged illness he is the more likely is the rectum to be incompletely voided. Moreover, the routine treatment in dysentery helps to aggravate this retention. Opium suppositories paralyze expulsive muscles, but do not relax the sphincter; the number of actions is lessened and they are smaller, but the dangers are increased in proportion to the apparent success of the treatment, and the more severe the case and the more energetic the treatment the greater is the danger. In graver forms we have the more abundant, dirty-white, purulent, and fetid diphtheritic dysentery. The abundance of fluid favors its retention and accumulation, and every opportunity is given for the absorption of poisonous materials and systemic Under such circumstances can any course seem more unreasonable than the ordinary treatment adopted, and can any course be reasonable except one which applies general and accepted principles to the peculiar physical conditions of dysentery? Keep the colon and rectum empty and clean; that is the law and the whole gospel.

Methods of Irrigation and Antisepsis of the Colon and Rectum.—In the earlier methods of rectal and colon treatment, water was thrown into the bowel, retained for a certain time, and then expelled. Some of the most excellent results are reported from this plan and within recent date. But this cannot but be an imperfect way of cleansing the bowel, although it answers well enough for bringing an antiseptic fluid in contact with the wall of the bowel and with germ-breeding mucus. The objection to it is the necessity of distending the inflamed coats of the bowel up to a point where injury may be done, if any considerable quantity of water is injected; its advantage is that by this distention the antiseptic fluid washes the inner wall more thoroughly than without it. The method is better fitted, therefore, for subacute cases, or those tending to become chronic, than for the acute inflammation, with necrosis of the mucous Properly speaking, this method is not irrigation at all, and the only procedure deserving of this title is that in which there is a free and immediate escape of the water thrown in; and even without argument it is apparent that in this way only can the bowel be thoroughly emptied and made aseptic.

The mechanical difficulties are very much greater in the efforts to irrigate the colon than in the case of the rectum. To wash the rectum, a double, in-and-out, hard-rubber tube, passed into the rectum five to eight inches, through which flows a current of water from a fountain syringe, answers the purpose well. The only objection is the pain which attends the introduction of a hard, inflexible instrument through the irritable anus. Two soft-rubber tubes passed side by side—the larger one for the escape-current-are more comfortable for the patient and better in every way. No. 17 English (29 French) is a good size for the smaller tube; the escapetube can be two sizes larger. A large-sized soft catheter will do very well for the entering cur-The double-current soft-rubber tubes are not so successful; their soft and thin walls are pressed upon by the sphincter, and escape of fluid is obstructed. Then, again, there is an advantage in having two separate tubes, as either can be pushed up or down as it is desired to wash different parts of the rectal wall; they are, therefore, to be preferred to any doublecurrent tube. The disagreeable sensation of distending the anus passes away in a few moments, and the patient gets so much relief from the operation that he ceases to object. Preliminary cocaine application may be used if the suffering is great.

All that is needed, then, for this operation are a fountain syringe, attached to a small rubber tube or large silk catheter, and an escape-tube of large size of soft rubber, made long enough by the attachment of a long piece of tubing, so that the fluid escapes into a vessel on the floor. The hand holds and guides the tubes, and changes their position from time to time.

The colon cannot be distended with water or irrigated with the same facility. That water can be made to pass through the sigmoid flexure there can be no doubt; but the passage of a tube through the flexure into the colon is a difficult task. If this be tried on the cadaver with the abdominal wall removed, one can see how difficult it is. The end of the instrument must describe a complete curve on itself, as if it were about to tie itself into a knot. Even with the hand pressing on the passing instrument and guiding it, it is not easy to accomplish. It is clear from the experiments Johnston has made. that a partially-flexible tube, like the oldfashioned stomach-tube, should never be used, and that a small tube does not pass as readily as one which more nearly fills the bowel. Distending the rectum with water as the tube advances does not favor the passage as much as leaving the bowel empty. The tube finds its

way better along the mucus-covered mucous coat. This is only in experiments on the cadaver, when the eye is watching the process; the contrary is the general opinion of physicians from efforts on the living patient. But the turning of the instrument on itself in a cavity filled with water, when the end strikes against the wall, is very likely to happen, and can easily be mistaken for the onward progress of the instrument. In the rectum the finger introduced discovers the error of direction, but higher up it is not possible to do so.

The conclusion of many trials must convince any one that the attempt to make the instrument enter the descending colon as often fails as succeeds. The difficulties show that all colon irrigation must be done by one tube. Dr. Johnston tried the double-current stomachirrigator, and has had constant failure: the closure of the lumen from twists of the tube or from outside pressure prevents the exit of the injected fluid; so that the only way in which this can be accomplished is to force half a pint or one pint of fluid into the colon, and then allow it to escape at once through the same tube; in this way the colon and sigmoid can be thoroughly washed out.

What are the indications for the choice of colon or rectal irrigation? In all cases of socalled catarrhal dysentery, where the stools are small, contain blood and mucus, and in all cases, mild or severe, where the general or local symptoms are relieved by washing the rectum, no attempt need be made to do more than this; for even when the disease extends into the sigmoid flexure and colon, the curative influence is transmitted along the bowel-wall upward, as gargling the throat benefits laryngeal inflammation. If the patient continues to have fever, delirium, great restlessness, or other symptoms of general infection, or if stools are large, thin, with a gangrenous odor, containing blood, mucus, and tissue-like shreds, then the attempt should be made to make the tube pass in the sigmoid for higher injection. If the patient is on his left side, with hips raised, a gentle current may pass from a raised fountain syringe into the colon, even if the point of the tube has not passed beyond the first curve of the flexure. There is danger of perforating an ulcer, even without much force being used, so that the operation should be done with the greatest gentleness. In the great majority of cases of dysentery, as we see it, rectal irrigation may, by continuing experience, be proved to be all that we need to gain the desired end.

The quantity of water used depends upon the circumstances of each case. As a rule, it should

pass in and out of the bowels until it runs clear, and in the case of both the colon and the rectum the amount thrown in should be equalled, or almost equalled, by the amount which escapes; if the egress is not free, the operation must be stopped until the trouble is remedied. There need be no limit to the quantity of water.

The frequency of irrigation is to be regulated by the number of stools, state of decomposition in the bowel, and other conditions. A good rule is to try to prevent the patient from having any stools at all; let his bowels be emptied only at your command through the inserted tube; at first once in three hours, later three times daily, as the outflowing fluid contains less blood and has less odor. Keep the rectum empty and clean is the one rule.

At first wash the bowel once in three hours, later three times daily, and so on with diminishing frequency, as there are less odor, less blood, and finally less mucus. When mucus is no longer seen in the form of thin flakes, the patient may be said to be well; but for a few days one daily irrigation serves a good purpose. Relapses should at once be met by a return to local treatment.

As an irrigating fluid, water may be used plain, hot or cold, or may contain in solution any of the numerous antiseptics. Extreme cold or very hot water may be injected, but both must have a more or less irritating effect, and their action, in the nature of things, is intermittent. If a continued current of cold or hot water could be kept on the inflamed surface, the case would be different. The surgeon would not apply great heat or cold for five minutes to an inflamed ulcer of the skin, and then leave the ulcer alone for three or more hours. It may be practicable to keep water flowing in and out of the rectum for many hours, but few patients could bear such continual distention of the sphincter.

Almost every antiseptic has received warm recommendation. Fifty-three cases of acute dysentery were treated at the Military Hospital at Oran with a 1 to 5000 bichloride solution. After the first day the stools were fewer in number, and in three or four days the mucus disappeared; tenesmus and pain were soon lessened.

Lemoine treated fifty-four cases of dysentery with solutions of corrosive sublimate (1 to 5000). Six ounces were injected into the rectum twice daily; later a solution of the strength of 1 to 3000 was injected twice daily. The fluid was not retained longer than ten minutes. Improvement followed immediately, and acute cases were

cured in from one to three days. No systemic poisoning in any case.

Notwithstanding all this favorable testimony, the dangers of ulceration in the colon being set up by the remedy, and the grave doubts lately raised as to the value of corrosive sublimate as a germicide in just such conditions as exist in dysentery, deter one from using it at all. Under no circumstances should it be employed without an immediate outlet for the solution.

Tannin destroys bacterial life and renders ptomaines innocuous. It is recommended by Cantani for typhoid fever, and it may have as good an effect in dysentery for the same reason.

Salicylic acid, thymol, aseptol, sulpho-carbolate of zinc, alum, hydrochloric acid, carbolic acid, boric acid, the sulphites, and hyposulphites have all been used and advised, but no sufficient number of cases have been treated by any one of these as to lead to its preference over all other remedies of the same class.

Boric acid and carbolic acid are the only antiseptics used by the author frequently. The results have led me to think that the former, or both together, give all we want, and as Johnston believes that a great part of the benefit comes from the cleansing and complete emptying of the rectum, the least irritating and least dangerous germicide ought to be preferred.

### MODERN CHOLERA THERAPEUTICS.

DR. WLADIMIR ZALOZIEGKI (Wiener Medisinische Blätter, No. 37, 1892) reviews the various treatments suggested by well-known authorities for cholera. We reproduce only such as have not already appeared in the GAZETTE. He thinks we are now so much better able to cope with this disease than formerly that we can face it hopefully.

Professor Ziemssen emphatically recommends the immediate use of calomel in treating cholera diarrhœa, beginning with two or three doses of 7½ grains each, followed by small doses of § of a grain every two hours. Ziemssen recalls the excellent action of calomel in the begining of typhoid, and also the equally favorable experiences in the fermenting diarrhoea of childhood, and thinks this is due to the wellknown fact that a portion of the calomel becomes changed in the intestine to corrosive sublimate, and as corrosive-sublimate solutions have a fungus-destroying action in a strength of 1 to 30,000, it is easy to believe that the bacilli in the intestine are directly killed by the calomel. While finding it becoming that we should place confidence in the authority of

Ziemssen, Zaloziegki thinks it not at all advisable to simply order calomel in every case or opium in every case. He thinks the cases should be carefully individualized, and strong, youthful individuals chosen for calomel, while children, feeble and aged individuals should be given opium. Personally he decidedly prefers the calomel when there is no contraindication. in which he would include diarrhœa which had already been running on for days; and would start the treatment with three 7½-grain doses in the course of three hours. This remedy, from old experience, admirably suits our present view of the cholera process. On the one hand, it acts in the upper portion of the small intestine as a fungus destroyer; and, on the other hand, in the sudden onset of cholera, there is always something contained in the intestine, the removal of which by the laxative action of the calomel is desirable.

Zaloziegki thinks well to mention also pure naphthaline in 7½-grain doses five to ten times a day, and subnitrate of bismuth in doses of from 7½ to 15 grains three times a day, although he does not desire them to find many adherents.

Hydrochloric acid already has many adherents and can be retained in use during the cholera diarrheea. As a prophylactic, three doses daily of 10 drops each after meals are sufficient; during the prevalence of cholera diarrheea, 5 to 10 drops every two hours.

On practical grounds the faith of the public in the effective action of the so-called "cholera drops" should not be disturbed. The Russian cholera drops have attained a certain celebrity. They are composed of—

Tinct. opii camph., 6 parts; Vini ipecacuanhæ, 4 parts; Tincturæ valerianæ æth., 12 parts; Olei menthol pip., 1 part.

Sig.—15 to 25 drops in peppermint-tea every half-hour.

These drops are, as Ziemssen shows, especially excellent in their effect on the dread of cholera, and they may be recommended for use in every family, in case of illness in the night, for temporary use.

### THE THERAPEUTICS OF TETANUS.

Professor P. Albertoni (Therapeutische Monatshefte, presents a tabulated list of one hundred and seventy-six cases of tetanus, with the remedy used and the result. His table covers cases treated during the past ten years,

and while making no pretension to completeness, is sufficiently so to be very instructive; for we learn from the table,—

- 1. That tetanus is not such a deadly disease as has usually been supposed.
- 2. That tetanus may be cured by many and very different remedies, which means, according to a well-known therapeutic maxim, that it often gets well of itself.

Of the tabulated cases, 21.1 per cent. died. According to Lormanni's official statistics of the tetanus patients treated in the Italian hospitals from 1882 to 1887, forty-four per cent. died.

Patients who survive the first week have a much better chance of ultimate recovery. It is worth noting that various new remedies—urethan, paraldehyd, salicylate of sodium, carbolic acid—have often acted very successfully. This shows that tetanus may be combated with a variety of remedies.

The treatment most lauded at present is that with the serum of animals which have been rendered immune, as discovered by Behring and Kitasato. Albertoni suggested, however, that the cases thus treated were the ones which would have recovered at any rate, for one case where a fatal result followed the injections was not reported. Dr. Finotti reports a case whose cure he ascribes entirely to the antitoxin, because no other remedy was used; but it may be remarked that an iodoform bandage was immediately placed on the wound. Lormanni considers this local treatment almost a specific for tetanus. According to the experiments of Vaillard and Bouget, by means of a local antiseptic bandage, the other micro-organisms which have crowded in with the tetanus bacilli are destroyed, and so an important factor eliminated from the destroying action of tetanus. If the clinical and experimental results are carefully considered, then chloral is still the preferable remedy, as it has given the best relative results both in lessening and soothing the pain and in aiding a favorable outcome. Verneuil maintains that during the campaign of 1870, by the use of large doses of chloral, he cured fifty per cent. of his cases. Carpenter and Todd report very favorable results from the application of ice to the vertebral column. This seems rational, as there is great hyperthermia in tetanus. The latest experiments of Richet with electric tetanus have established Gaglio has shown by experiment this fact. that animals poisoned with strychnine may be saved from a fatal dose by means of artificial cold obtained by applications of snow and cold bandages.

#### POWDERS FOR DYSPEPSIA.

According to L'Union Médicale, DUJARDIN-BEAUMETZ recommends the following treatment in dyspepsia:

B. Subnitrate of bismuth, Sulphate of magnesia, Prepared chalk, Phosphate of soda, aa Ziii.

To be divided into 40 powders. One powder to be taken after each meal when dyspepsia, accompanied by belching and flatulence, is present.

### THE VALUE OF CARBOHYDRATES FOR DIABETICS.

In the *Deutsche Medicinische Wochenschrift*, No. 33, 1892, Dr. Leo presents his view of the proper way to nourish patients suffering from diabetes mellitus.

In most methods of treating diabetes the chief attention is directed to preventing or reducing to a minimum the excretion of sugar. To accomplish this end carbohydrate food is forbidden, and in most cases this regimen is followed by an improvement in the patient's condition. But this improvement is not always of long duration. Marked digestive disturbances occur. and the patient loses flesh in spite of the diminution in the excretion of sugar. If carbohydrates are again allowed to form, in moderate quantities, a part of the nourishment, the condition is often improved, even if the excretion of sugar reaches its former height. has a double cause,—the appetite is improved by the change in diet, and the digestive organs are relieved from the burden of excessive quantities of albumin.

The rôle which the carbohydrates play in the food of the diabetic is doubtless a complicated one.

Dr. Leo has conducted some experiments which gave him the opinion that the carbohydrates, besides their harmful action in diabetes mellitus, may also have, in a certain sense, a favorable action. Hirschfeld observed a case in which the absorption of fat was improved by eating white bread. Troje holds, too, that when moderate quantities of carbohydrates are used continuously, the patient's power of assimilation improves.

Leo still thinks the reduction of the carbohydrates in the food of the greatest importance in the treatment of diabetes, and he would exclude them wholly in the beginning of the treatment. But he holds that, after a time, they may be allowed in moderate quantities with advantage, even in severe cases. When, and for how long, to allow this he thinks should be strictly individualized. In general he allows it to be determined by the weight of the patient and the amount of urine passed in twenty-four hours. He thinks it a mistake to make the amount of sugar given off the only measure of the condition and treatment of the patient; for what will it avail to reduce the excretion of sugar to the minimum if the patient himself also fails increasingly? Only the careful consideration of the whole condition of the patient, and the belief that a portion of the carbohydrate food may be assimilated, even by severe diabetics, will prevent such mistakes in treatment.

### THE TREATMENT OF ACUTE ENCEPH-

In the treatment of acute encephalitis, CROCQ (La Presse Médicale Bèlge) recommends the application of six leeches behind the right ear, since the seat of the disease is thought to be especially on the right side of the brain. At the same time the following formula is advised:

R Calomel, 1 gramme; Aloes, .30 gramme; Sugar, q.s.

Mix, and make 3 powders. One powder every two hours.

This combination acts as a resolvent, purgative, and revulsive. In the course of a few days, according to indications, the leeches are reapplied and iodide of potassium is administered. As to diet, vegetable soups and milk are to be depended upon.

#### THE TREATMENT OF ALBUMINURIA.

After considering the dietetic regimen in regard to the treatment of albuminuria, G. Sée. (Bulletin de l'Académie de Médecine) concludes a lengthy article as follows:

- 1. Bleeding, dry cupping, and blistering are all therapeutic measures that tend to increase the albuminuria and the nephritic disorder.
- 2. Sudorifics, destined to enhance the action of the skin, such as lukewarm baths, massage, saline mineral waters, and vapor-baths, are, to say the least, dangerous measures. Internal diaphoretics, particularly pilocarpine, are toxic and too uncertain.
- 3. Diuretics are only useful in certain nephritic oligurias, and have no general application. They are especially contraindicated in interstitial nephritis. All diuretics are to be condemned, particularly the sodic alkalines, Vichy, Royat, and Saint-Nectaire mineral waters. Lactose may be employed, as it does not affect the kidneys directly.

- 4. Purgatives are no better than diuretics.
- 5. The cardio-vascular medicaments, such as digitalis, strophanthine, convallamarine, caffeine, and sparteine, have no special application; they rarely act as vascular agents alone, and are poisons to the kidneys, with the exception, perhaps, of caffeine and sparteine. The iron preparations, considered as tonics, such as the wine of quinquina, for instance, are sure to increase the nephritis.
- 6. The vaso-motor iodides, which are generally vaso-motor dilators, are only serviceable as antisyphilitic remedies, and are to be used in renal disease of syphilitic origin. They do not cause renal obstruction, since they are readily absorbed, although their elimination is not always certain.
- 7. The remedies recently brought forward are strontium and calcium.

The observations of Paul, Dujardin-Beaumetz, and those of the author prove that these therapeutic agents are of value. They may be prescribed as follows: Lactate of strontium, 4 grammes per day; bromide of strontium, 4 grammes per day; bromide of calcium, 4 grammes per day; chlorbromide, 4 grammes. The latter substance is of special advantage, as it does not cause symptoms of bromism.

### THE ACTION AND USES OF IODIDE OF STRONTIUM.

A. MALBEC (Les Nouveaux Remèdes, September 24, 1892), who has studied the action of the iodide of strontium on the circulation, finds that the salt produces a momentary rise of the arterial pressure and an increase in the number of cardiac pulsations. These phenomena soon disappear, and if the ingestion of the drug is insisted upon, the arterial pressure falls, while the cardiac contractions continue to increase in number, accompanied with periodic and rhythmical variations. The author believes that the new remedy acts chiefly upon the vaso-motor centres and directly on the heart. It appears that the drug, in the first period, acts like the potassium salt, but less energetically. In the second period,—that is, when large doses are employed,—the stimulating influence of the strontium iodide is as decided as that exercised by the potassium salt. From the action of the drug under consideration, the author suggests that the remedy be applied therapeutically in those cases of heart-disease in which the potassium salt is indicated. would be more advantageous especially when a prolonged use is called for. The writer refers to a case reported by Laborde. A woman, fifty

years of age, suffered from chronic endocarditis, accompanied with marked dyspnœa and attacks of angina pectoris. Iodide of potassium, administered for a long time, was of no avail. This was then substituted by the strontium salt, in doses of 1 gramme a day, subsequently increased to 2 grammes a day. This drug was well tolerated, and improvement in the general condition of the patient was observed in the first twenty-four hours. The changes continued to be fayorable under the uninterrupted administration of the remedy. This result warrants the repeated trial of the new salt in other similar cases. The iodide of strontium may be prescribed in this manner:

R. Iodide of strontium (c. p.), 40 grammes; Distilled water, 300 grammes. M.

A dessertspoonful of this solution represents two grammes of the salt.

The following formula is perhaps to be preferred:

R. Iodide of strontium, 30 grammes; Simple syrup, 300 grammes.

The simple syrup may be substituted by that of bitter orange-peel.

### THE FAILURE OF DIURETIN TO AVERT URETHRAL FEVER.

The following article by Dr. Keyes, of New York, is of interest, in that in a previous paper he highly praised diuretin. It will be remembered that in a previous number of the GAZETTE doubt was thrown upon the universal applicability of this drug. He says:

I feel it incumbent upon me to present a short note in retraction of the claims, or rather pretensions, of diuretin as a drug capable of averting urinary or urethral fever.

These pretensions I put forward modestly at the last meeting of the Society, in Washington, September, 1891, impelled by an unusually successful consecutive series of cases, in which, during a number of months, this drug had been freely used, and in which there had been no urethral fever.

I claimed nothing except the coincidence of result in a number of consecutive cases, and I promised to investigate further and to report at this meeting.

My report is simple; I need not delay you by detailing cases. In a sufficient number to break all claim for reliability I have administered diuretin freely, and used other precautions, and yet commonplace urinary fever has come on and run the usual course. I am still

studying the matter, as we all are, and I trust that sooner or later an infallible prophylactic may be discovered. I have believed that I possessed it several times in my life, but as many times have I been disappointed.

One of the most thorough contributions of recent date upon this subject, in a scientific way, that I am acquainted with is from the pen of Dr. Noël Hallé, in the Annales des Maladies des Organes Genito-Urinaires for February, 1892, which embodies the present status of conviction of Professor Guyon and his following, and the results of the laboratory investigations at the Hospital Necker, with the personal work of Hallé and Albarran, and citations of recent authorities.

It ascribes all forms of urinary fever, l'infection urinaire, as they term it,—from the simplest rigor to the most pernicious deadly attack, to various but different bacterial infections.

It is needless to say that the subject is not yet cleared up, even by this painstaking study, and the practical side of prevention is hardly touched upon. By such studies light must eventually come, but the way is long and still dark; much mystery surrounds it.

I think I can hardly better illustrate the difficulties attending an attempt at generalization upon this intricate subject than by a detail of one case that illustrates enough well-known features of this peculiar malady to justify its brief reproduction:

A healthy gentleman, thirty-eight years old, with sound kidneys and clear urine, save an occasional urethral shred, consulted me in December, 1891. He had moderate obstructive urethral symptoms, with much suprapubic pain. A No. 10 French bougie found two moderate constrictions in the pendulous urethra at the usual sites, but would not pass the bulbo-mem-Several smaller sizes were branous junction. successively used, but no instrument engaged, so that the attempt to enter the bladder was given up for the day, as the patient's symptoms were not urgent and as no preparation against urinary fever had been made. was a fair show of blood from the soft, deep stricture and a little subsequent hemorrhage, yet all the blood came from in front of the bulbo - membranous junction, beyond which nothing had penetrated. Without other precautions than a little alkaline drink, this patient went at once to his home in a neighboring city. He lost some blood and had considerable pain on urinating, but no chill whatever and no elevation of temperature, and his stream became larger and the suprapubic pains less.

This case illustrates what we so very often see,—i.e., a lesion of the mucous membrane drawing blood, and some moderate distention of strictures anterior to the triangular ligament, yet no subsequent chill or general reaction, even when no precautions are taken.

This patient now took winter-green oil freely, continued his alkaline medicine, and filled himself up with quinine. His urine was perfectly clear. In this condition I passed a filiform soft bougie (No. 3 French), in my office, fairly into his bladder. It was slightly grasped on withdrawal, but brought no blood. Ten hours later, after reaching home, a few hours after his first urination, he had a violent chill and a temperature of 103° F., and within the next fortyeight hours he had five more severe chills, showers of uric-acid crystals and urates, scanty urine containing albumin and casts, and great physical and mental depression. Here surely was a good subject for investigation. I gave this patient salol and diuretin freely (30 grains shortly before the instruments were again used), and, having him warm in bed, I passed successively No. 3 and No. 6 French bougies, bringing a little blood. There was no chill and no reaction whatever, and this was not because he was warm in bed and kept there, as the subsequent history shows.

At the next sitting, under exactly the same conditions, I passed a No. 11 French soft bougie. It was very tight; some blood followed, but there was no chill. This was an increase of five sizes French.

At the next sitting I used the same precautions and raised four sizes,—to No. 15 French. There was a little more blood than before on the withdrawal of the instrument, but it was slight. All the precautions had been used, yet six chills followed; albumin reappeared, and considerable straining on urination, and evidences of posterior traumatic urethritis, so that three weeks were allowed to pass before another attempt at dilatation was made. Then a No. 15 French bougie was again passed, with all the previous precautions and an extra one.

I recalled Hartmann's statement, made in an article entitled "Fièvre Urineuse," which I had just read, to the effect that urinary chill was due to the forcible penetration, under a strong urinary effort, of morbid organisms, which were thus driven into the circulation through a newly-abraded surface; and I coupled this remembrance with a statement made before this Society by Palmer, of Louisville, that he prevented chill after deep internal urethrotomy by filling the bladder with hot bichloride solution, and letting the patient void

it after the operation. So I gave the salol and diuretin, and, after washing the urethra, filled the bladder with a hot bichloride-of-mercury solution (1 to 3000). Then I passed the No. 15 French soft bougie, as before. Blood followed, as usual. The patient immediately evacuated, spontaneously, his bladderful of hot bichloride solution, and he had no chill and no reaction whatever. I repeated this several times until I reached No. 26 French,—the patient's full size, in my opinion,—and never a chill or any disturbance followed.

Was it, finally, the bichloride that did the work? I cannot tell, for I passed the full-sized instrument without using any precautions. I still brought blood, but no chill followed. My patient was at last acclimated to his bacteria, I suppose. Now he passes his instrument himself without drawing blood and with no chill.

I have used the bichloride many times since, alone and combined with other means, yet sometimes urinary chill follows. Therefore, I frankly say to-day that I know of no positively certain means of averting urinary chill in every case, but of those I rely on, I consider the combination of salol, diuretin, bichloride irrigation, and warmth in bed the best.

#### APPLICATION FOR HEMORRHOIDS.

Preismann gives the following for this purpose:

B. Iodide of potassium, gr. xxx to lxxv; Powdered iodine, gr. v; Glycerin, 3x. Mix, and label "For external use."

The patient is to take a hot sitz-bath daily, and to apply to the hemorrhoids every three or four hours small tampons of absorbent cotton mixed with this glycerole. This diminishes the sensation of pain and burning.

Should inflammation become increased, a weaker solution may be employed, or in other cases the strength of it may be increased.

Preismann claims that this treatment will cure hemorrhoids in from two to three weeks.

### THE USE OF MENTHOL IN PRURIGO.

COLOMBINI publishes forty-four cases of pruriginous dermatitis treated with menthol according to the method of Dubreuilth and Archambault. The cases may be divided into three classes:

1. Those in which an inflammation of the

skin, accompanied by an eruption, produces itching; as, for example, in eczema.

- 2. Those conditions of the skin in which the itching is the chief symptom, without any other visible symptoms; or, in other words, nervous pruritus.
- 3. And, finally, in those cases in which eruptions having appeared, and been scratched, the disease is produced by the friction which is applied.

For these cases the following prescription is given:

R. Menthol, gr. lxxx to clx; Alcohol, Ziiiss.

Or,

R. Menthol, gr. clx;
Oil of sweet almonds, Ziiiss.

Or, again, an ointment consisting of-

R. Oxide of zinc, Powdered starch, of each, Zviss; Menthol, gr. vii to xlv; Vaseline, Zii.

Or, finally,

R. Oxide of zinc, Subnitrate of bismuth, of each, Ziii; Menthol, gr. xv to xlv; Powdered starch, Zi.

The results which he obtained have been excellent in the first class, variable in the second class, and very good in the third class.—
L'Union Médicale.

### TREATMENT OF ECZEMA OF THE VULVA.

LUSCH is said by L'Union Médicale to recommend the following prescription in this condition:

R. Tincture of opium,
Bicarbonate of sodium, of each, Zii;
Bicarbonate of potassium, Zi;
Pure glycerin, Ziss;
Distilled water, Zviii.

Make a solution, and apply it hot morning and night to the diseased area. After each lotion powder the parts with the following:

> B. Finely-powdered starch, 49 parts; Finely-powdered camphor, 1 part.

### THE TREATMENT OF DIARRHŒA IN INFANTS.

According to the Revue de Thérapeutique Medico-Chirurgicale the following prescriptions are very useful under these circumstances:

R Phenol-water, 3ii;
Subnitrate of bismuth, gr. xlv;
Lime-water, 3iss;
Syrup of bitter orange, 3ss.
One-half teaspoonful every two hours.

If the diarrhoea resists this treatment, the author recommends an infusion of colombaroot with bismuth, as follows:

Colomba, gr. vii to xv.

Make into an infusion with 2 ounces of water, and add subnitrate of bismuth, 45 grains; syrup of bitter orange, 1/2 ounce.

One-half to one teaspoonful of this every two hours.

#### AN OINTMENT FOR CHAPPED SKIN.

R. Menthol, gr. vii; Salol, gr. xx; Olive oil, 3ss; Lanolin, 3iss.

Make into a salve and apply to the affected part.

On the first application there will be some pain of the skin. After this the cracks in the skin will rapidly disappear, and may be prevented from returning by the regular use of this ointment twice a day.—L'Union Médicale, November 15, 1892.

### AN OINTMENT FOR THE SKIN-SPOTS OF PREGNANCY.

R. Pure oxide of zinc, gr. iv; Yellow oxide of mercury, gr. xvi; Castor oil, Coca-butter, of each, 3iiiss; Essence of roses, gtt. x.
Make an ointment and apply, with friction, twice a day.

At night allow some of the ointment to remain on the parts affected.—L'Union Médicale, November 24, 1892.

### AN ADHESIVE ANTISEPTIC OINTMENT.

L'Union Médicale for November 22, 1892, recommends the following:

R Oxide of zinc, gr. iv; Chloride of zinc, gr. xx; Gelatin, zvi; Distilled water, zx.

This application, applied to any broken surface of the skin, is useful as a protective and antiseptic.

### THE USE OF SPRAY.IN DISEASES OF THE STOMACH.

DR. EINHORN, in the New York Medical Journal, contributes an article upon this subject, in which he points out that the ability of the spray to medicate large surfaces of mucous membrane in the air-passages caused him to think of its employment in the treatment of diseases of the stomach. The usual spray apparatus can be modified in such a way that, instead of the hard-rubber branch of the apparatus, the same branch is made of soft rubber and lengthened. In this way the gastric spray apparatus consists of the usual spray apparatus, in which there is a soft Nélaton tube, of seventy centimetres' length, inserted between the hardrubber spray end (one centimetre in length) and the hard-rubber branch running to the bottle, within the Nélaton tubing. Another soft tube of thinner calibre connects the inner capillary tube with the nozzle.

As the spray is generated by the air forced by the bulb through the tube taking up the fluid and dividing it into fine particles, the medicaments will necessarily come in contact with every part touched by the air.

If the stomach is empty when spraying, the air that enters will expand the organ and transport the fluid to every part of its interior.

The administration of the spray in gastrotherapeusis may perhaps be a suitable form for fulfilling the following purposes:

- r. To disinfect the mucous membrane of the stomach.
  - 2. To exert an astringent effect.
- 3. To produce analgesia in gastralgia of local character (from ulcer, cicatrix, or cancer).

Method.—As it is only possible to spray the stomach in its empty state, it will be necessary to administer the spray either when fasting or after a previous lavage.

A preceding lavage will always be indicated if we intend to disinfect or apply astringents, for in these instances it is necessary first to remove the mucus with the micro-organisms embedded therein. In order to exert an analgesic influence, the lavage may perhaps be omitted.

After filling the apparatus with a sufficient amount of the required solution, the tube end is dipped into warm water and thereupon inserted into the stomach of the patient. It is best to begin with the spray as soon as the nozzle (being in the stomach) has a distance of about forty-five centimetres from the lips of the patient. Provided the nozzle is not covered by the stomach-wall, there can be heard during the spraying, at times in the neighbor-

hood of the patient, otherwise by putting the ear on the gastric region, the sound characteristic of the spray. In case the opening is covered, the spray is generally unable to pass, and it then is necessary to insert the tube a little farther.

Even if the spray works well from the beginning, it will be expedient after a while to introduce the tube a little farther, in order to have the spray work from different points.

In several cases Dr. Einhorn made use of this method for therapeutic purposes, and asserts that the administration of the spray is easy and convenient.

A report of the results obtained will appear in a report later on, after gathering sufficient experience with this method of treatment.

### THE ELIMINATION OF CREOSOTE.

Continuing the studies of other investigators upon the above subject, L. Imbert (Bulletin Général de Thérapeutique) has found, after careful experimental observations, that creosote is chiefly eliminated by the urine, no matter how the drug is administered, whether subcutaneously, by the mouth, or by the rectum. The author has likewise established the fact that the largest quantity of creosote is eliminated during the first twelve hours. While the elimination by the kidneys is very rapid, that by the lungs is comparatively insignificant. Of the three chief elements of creosote,—cresol, guaiacol, and phlorol,—the guaiacol appears to be the most rapidly eliminated.

### TREATMENT OF ERYSIPELAS.

Dr. J. A. GLASER (Therapeutische Monatshefte) reports one hundred and forty-eight cases of erysipelas, in part from his private practice, and in part from cases observed in the hos-These did not include any but his severe cases, and were scattered through fifteen or sixteen years. The patients varied in age from three-fourths of a year to seventyfive years. The largest part of them were between twenty and forty years old. were fifty-one women and ninety-seven men. The mortality was eleven per cent. for the one hundred and forty-eight cases; but, leaving out the complicated cases, his mortality was only 4.4 per cent. He thinks it very untrustworthy to try to lay down exact figures as to the duration of the disease and its different symptoms and phases. So much depends upon the age, sex, constitution, etc., of the patient, which any attempt to describe accurately would be

Gläser relied for treatment on diet. purging, and lead-water bandages, with rest in bed and nursing. He tried the treatment recommended by Volckmann, of painting with ten- to twelve-per-cent, nitrate of silver solution in one case, but the result was a frightfully sore back for the patient, which lasted until after the erysipelas had wearied of its wanderings. He followed directions closely, but may have happened on a patient with a specially tender skin. At any rate, he was not tempted to use that treatment again. The treatment of Kraske-Riedel he has never tried, but he finds it both cruel and of no avail. They make numerous incisions in the skin bordering on the disease, and then apply corrosive-sublimate solution or a five-per-cent. carbolic solution. Gläser thinks these solutions could be effectually applied without making the incisions, although he does not approve of that. He says some one recommended bandages with a watery carbolic solution for rheumatic polyarthritis. He made trial of this, but found absolutely no improvement in the polyarthritis, and a change in the color of the urine, such as is characteristic of carbolic-acid poisoning, occurred. He thinks if this could occur when the skin was unbroken, the danger is far greater under other circumstances. He also tried the application of carbolic acid for erysipelas, but here, too, the result was absolutively negative.

ANTISEPTIC TREATMENT OF PULMO-NARY TUBERCULOSIS BY INHA-LATIONS OF IODOFORMATED OR IODOLATED ESSENCE OF TURPENTINE.

DELTHIL (Journal de Médecine de Paris), who has studied the antiseptic treatment of tuberculosis carefully, recommends the iodoformated or iodolated essence of turpentine as an excellent remedial combination, administered in the form of inhalations, in the disorder mentioned. The inhalations are said to be well borne by patients, and are given in séances, each of from ten to fifteen minutes' duration, occupying in all about four hours every day. The following mixtures may be used:

- Essence of turpentine, 350 grammes; Essence of spikenard, 100 grammes; Iodoform, 8 or 10 grammes; Sulphuric ether, 20 grammes. M.
- R. Essence of turpentine, 350 grammes; Essence of spikenard, 100 grammes; Iodol, 8 or 10 grammes; Sulphuric ether, 20 grammes. M.

Either mixture is placed in a flask of one litre capacity, connected with the corresponding inhaling-tube. The combination must be renewed every ten days. The inhalation-flask must be placed in a water-bath at a temperature of 30° C. In order to enhance the evolution of iodine, one gramme of iodoform or iodol may be added to the mixture every two days. After each inhalation all the orifices of the apparatus must be well closed. On the whole, the effects of these medications are decided, the author drawing the following conclusions:

- To obtain a direct, local pulmonary asepsis, a non-toxic, antiseptic gaseous interchange is indicated.
- 2. The iodoformated or iodolated volatile oils of turpentine answer such indications.
- 3. Their absorption is proven by the fact that the substances are found in the urine after the inhalations.
- 4. Under the influence of this medication, the secretion and the cough are diminished, the appetite is increased, the morbid processes are stayed, and often a wonderful change is produced.
- 5. This is not an exclusive treatment, but permits the employment of the alimentary, medicinal, and hygienic measures recommended in the disease under consideration.

### THE TREATMENT OF ARTERIAL CAR-DIOPATHIES.

An exhaustive study of this subject has been made by Henri Huchard (Bulletin Général de Thérapeutique. The author divides arterial cardiopathies into three periods,—I, the arterial period; 2, the cardio-arterial period; 3, the mitro-arterial period. A special treatment is advocated for each one of these periods.

#### I. TREATMENT OF THE FIRST PERIOD.

a. Hygienic and Dietetic Treatment.—Preference should be given to alimentation composed largely of milk in all forms, vegetables, a few eggs, and later, of fresh and well-cooked meats. When the vascular plenitude is marked, there may be an indication for a lighter regimen. Feeding must, therefore, be subject to certain rules, particularly in regard to those predisposed to arterio-sclerosis or to heart-disease of an arterial origin; and it would be well, in this connection, to bear in mind this maxim: Modicus cibi, medicus cibi. The function of the skin should be aided by repeated cold bathing, and especially by the application

of massage or invigorating frictions, practised regularly every morning. In this way the circulation of the blood is made more active, both centrally and peripherally.

b. Trinitrine.—At this period of the disease, nitro-glycerin, or commonly called trinitrine, is prescribed, with the object of influencing the arterial tension by the depressant and vasodilator action of the drug. This medicament also diminishes the peripheral resistance, and increases, at the same time, the energy of the heart. The action of the remedy on the kidneys (interstitial nephritis existing almost always in arterial cardiopathies) is also marked, and the effects produced excellent. The drug should be prescribed, night and morning, for a period of from ten to fifteen days every month, in doses of from 2 to 4 drops of a solution of the strength of one per cent. This quantity may be progressively increased, according to the susceptibilities of the individual case, to 12 and even 20 drops a day, in divided doses.

#### 2. TREATMENT OF THE SECOND PERIOD.

c. Trinitrine and the Nitrites.—Trinitrine itself is insufficient at this period of the malady, and therefore the nitrites are combined with it, especially those of sodium and potassium. The action and elimination of the nitrite of amyl are too rapid to do much good, although the promptness with which the remedy produces its effects is highly valuable in anginous attacks.

d. Iodated Medication.—The author recommends this medication on account of the depressant influence exercised by it on the circulatory apparatus. The two salts used are the potassium and the sodium iodides, preferring the latter, because,—1, the potassium salt administered for a long time is a poison to the heart; 2, the cardio-arterial affections predispose to renal insufficiency and impermeability, and the slow and progressive accumulation of the salts of potassium in the economy constitutes a danger per se; 3, the iodide of sodium is better borne by the stomach, and is less prone to produce symptoms of iodism, but without avoiding them altogether. The potassium salt is used more largely, perhaps, in syphilitic subjects. These iodides may be substituted by those of strontium, and in cases where the digestive troubles are marked, calcium iodide should be preferred, in doses of from 1 to 2 grammes. During the first portion of this period iodide of sodium is prescribed, in doses of from 10 to 30 centigrammes in the course of twenty-four hours, best administered in milk, during twenty days every month, for

at least a year. During the ten days of the monthly suspension of the iodated medication, 2 or 3 drops of the one-per-cent. solution of trinitrine are given night and morning. There should be no fear of increasing the dose of the iodides to 1, 2, and even 3 grammes, provided the localization of the arterio-sclerosis on the heart has not occurred. At the end of the second period the myocardium becomes feeble, and there is then a tendency to visceral congestions and peripheral ædemas. Under such circumstances the author prescribes, besides the iodated medication, a heart tonic, such as the sulphate of sparteine or caffeine. The following is recommended:

Distilled water, 100 grammes;
 Iodide of sodium, 5 grammes (or 10);
 Sulphate of sparteine, 50 gramme (or 1).
 M.
 Sig.—A dessertspoonful twice or thrice a day.

#### 3. TREATMENT OF THE THIRD PERIOD.

1. Employment of Digitalis.—a. Contraindications.—The drug should not be employed in cases exhibiting evidences of subacute aortitis with attacks of angina pectoris. Interstitial nephritis, atheroma of the arteries, and sclerotic lesions of the valves are also contraindications for the use of digitalis.

b. Indications.—Hyposystolic manifestations. such as a slight pretibial cedema, fatigue, or insufficiency of the myocardium, as shown in the appearance of a rapid blowing sound, the production of œdematous congestions, etc., are all indications for the use of the drug under consideration. In arterial cardiopathies, when the arterial tension and the rapidity of the heart become irregular, showing the existence of pretibial œdema, digitalis, in such conditions, is always prescribed by the writer, as in these cases the effects produced by the drug are more marked than those caused in simple valvular The author insists,—I, that digitalis, even when administered in large amounts, is not dangerous in renal complications; 2, that the drug is useful, and often diminishes the amount of albumin, in not only cardiac albuminurias, but also in parenchymatous nephritis. The remedy is of no service in hepatic congestion or sclerosis, and is contraindicated in hypersystolic conditions, as well as in the last stages of asystolia and in degeneration of the myocardium.

c. Dose and Modes of Administration.—The writer prefers crystallized digitalin in solutions of 1 to 1000, and believes that this is a reliable preparation and well borne by patients. He prescribes at once in a single day 30, 40, and even 50 drops of the solution referred to, the

last quantity representing one milligramme of the crystallized digitalin or about four milligrammes of the amorphous body. The author recommends Petit's solution, which is made as follows:

R Crystallized digitalin, I gramme; Pure glycerin (sp. gr. 1250) 333 cubic centimetres; Distilled water, 147 cubic centimetres; Alcohol at 95° F., q.s. to make I litre at 15° C.

The digitalin is dissolved in 450 cubic centimetres of alcohol; the water and the glycerin is then added, and the litre is completed by alcohol.

This solution is advantageous, since fifty drops of it correspond to one gramme or one cubic centimetre. The arrival of the hyposystolic period, characterized by a slight pretibial cedema, is the signal for the beginning of the systematic administration of digitalis. This must be given every three weeks, during one day only, and in a single dose of 30 drops. By this method the cardiac fibre may be sustained for months and even years. To this treatment an absolute milk diet must be conjoined. If a patient presents a hyposystolic condition, or one of asystolia, the drug is not given immediately; the patient is first placed for a few days at absolute rest and under a milk diet. These two simple methods produce a certain amount of diuresis. After a few days a purge is administered, and on the following morning, for one day only and in a single dose, 40 or 50 drops of the one-per-thousand solution are ordered. Fifteen or twenty days later the same thing is repeated if the indication persists.

2. Milk Diet and the Treatment of Cardiac Dyspnæa.—a. Alimentary Regimen and Milk Diet.—If the dyspnœa is of alimentary origin, diet should be carefully guarded. All foodstuffs charged with toxines, such as soups and fatty substances, salty articles, preserves, pork, cheese, fish, game improperly cooked, etc., should be particularly avoided. Cold milk that has been well boiled should be preferred. A quantity of 300 grammes should be ingested slowly every two hours. If it is badly borne by the stomach, it may be mixed with a dessertspoonful of lime-water properly prepared, or with 1 gramme of bicarbonate of sodium. To avoid intestinal fermentation, to every cupful of milk 5 or 6 cachets of the following mixture may be added:

R Benzonaphthol, 20 grammes;
 Pancreatin, 10 grammes.
 Mix, and make 40 cachets.

The benzonaphthol may be substituted by the salicylate of bismuth, or the cachets in the milk may be substituted by 50 centigrammes of the subnitrate of bismuth. These medicaments may correct any diarrhoea present. If constipation exists, a dessertspoonful of magnesia, or cachets of from 50 centigrammes to 1 gramme of the powder of rhubarb, or, better still, 50 centigrammes each of the flowers of sulphur and magnesia, given every morning, should suffice. Aromatics may be used when patients have aversion for milk. The author employs with success, in such cases, the following mixture:

R. Fluid extract of coca, 120 grammes;
Fluid extract of kola nut, 80 grammes. M.
Sig.—A tablespoonful twice or thrice a day in milk or in Curação liquor.

This method may last from ten to fifteen days, or longer, if the dyspnœa is not relieved. When this has disappeared, the milk regimen should be diminished to from 1 to 2 litres per day of the lacteal fluid, to which may be added a few eggs and vegetables. If the dyspnœa should return, the patient is to be subjected again to the exclusive milk diet. Milk, on the whole, increases the energy of the heart, because it diminishes the work of that organ. Intestinal antisepsis may be brought about by the use of naphthol, in doses of from 1 to 2 grammes, or, better still, by benzonaphthol, in amounts of from 1 to 4 grammes per day. The author condemns, in these cases, the employment of salicylate of bismuth, betol, and salol, since the salicylic acid of these medicaments may produce irritation and congestion of the kidneys. In rebellious cases of dyspnœa, inhalations of oxygen and nitrite of amyl are of service, these latter being superior to those of iodide of ethyl and pyridin, and especially indicated in anginous accesses.

- b. Treatment of Nervo-Reflex Dyspnæa.—In the nervo-reflex forms of dyspnæa, bromide of potassium, in doses of 4, 5, and even 8 grammes per day, is the best remedy.
- c. Treatment of Cardio-Plegic Dyspnæa.—In cardio-plegic dyspnæa, due to dilatation of the cardiac cavities, there is nothing better than the application of general bloodletting.
- d. Treatment of Mechanical or Cardio-Pulmonary Dyspnæa.—If the condition is mechanical and of cardio-pulmonary origin, digitalis is still serviceable.
- e. Treatment of the Dyspnæa of Acute Pulmonary Œdema.—If the condition is due to acute cedema of the lung, better than digitalis are the injections of caffeine and those of strychnine, in doses of from 2 to 3 milligrammes a day. Finally, in these cases, electrical stimulation of the vagus nerve is apt to

produce excellent results, and similarly the application of acupuncture, vesication over the cardio-aortic region, and dry cupping. Atropine is of no practical value, and the same may be said of muscarine.

3. The Employment of Revulsives.—Cutaneous revulsives are to be employed only when there is a tendency to syncope. Their action, according to Besson, is summed up as follows: 1. Intense and rapid cutaneous excitations may produce slowing of the heart, preceded by a slight acceleration, marked increase in the force of the pulse, and a notable lowering of the arterial, accompanied with an increase of the venous, pressure. 2. Feeble excitations cause an acceleration of the heart and an increase of the arterial pressure. 3. Slow and permanent excitation (as blistering, for instance) produces anæmia of the adjacent parts and diminution of the pain. If the palpitations are distressing, cold-water applications are serviceable, or sprays of ether or chloride of methyl. The refrigeration of the præcordial region is especially indicated during the hypersystolic period. A milk diet and the ingestion of digitalis are to be continued. The following formula is recommended at this time:

Tincture of digitalis,
 Tincture of squill,
 Tincture of aconite root, of each, 5 grammes. M.
 Sig.—10 drops three or four times a day for a period of eight or ten days.

Muscular work and plethoric conditions must also be reduced by enhancing diuresis and diaphoresis, particularly in non-compensatory valvular affections and in those of the myocardium. In such cases a milk diet, frictions, massage, and passive movements are indicated, and the employment of the iodides as vaso-dilator medicaments. This method should be combined with cold affusions, local or general, and stimulating frictions to excite capillary action.

The author concludes his able article by speaking of the hydromineral and climatic treatment. With regard to the first, he recommends sulphur, bicarbonated, iodobromated, and sodo-chlorated waters. Springs having an elevation of five hundred or six hundred metres should be avoided, since at this height they are dangerous, the diminution of the atmospheric pressure tending to produce congestion and hemorrhage. The waters do good on account of their resolvent, diuretic, laxative, thermal, and revulsant effects; they similarly influence the peripheral and central circulation. Climate is of some importance, and, above all, high al-

titudes should be avoided. Places not subject to sudden changes of temperature should be preferred. High altitudes, however, are not contraindicated in those cases in which the cardiopathies are the result of disturbances of digestion, of an anæmia or neurasthenia. The sea-side is to be advised with caution, as in certain cardiopathies the climate of such regions tends to produce an unfavorable excitability of the circulation.

# THE TREATMENT OF DIPHTHERITIC ANGINA BY CHROMIC ACID.

In the treatment of diphtheritic angina, the two chief medicaments, according to LESCURE (Bulletin Général de Thérapeutique), are,—

- 1. To destroy the false membranes, so as to stop the false development of toxines.
- 2. To combat the effects produced in the economy by the introduction of said toxines into the circulation.

To meet the first indication the local application of chromic acid is to be made by means of a camel's-hair brush, using the following solution:

> R. Chromic acid, 2 grammes; Distilled water, 5 grammes.

Care should be taken to remove any excess of the acid. These applications are to be followed by those of tannic acid, made also with a camel's-hair brush, using this combination:

R Tannic acid, 6 grammes; Glycerin, 30 grammes.

Internally the following formulæ are recommended:

- R. Tincture of eucalyptus, 3 to 10 grammes;
  Mucilage of acacia, 90 grammes;
  Syrup of orange, 30 grammes. M.
  Sig.—To be taken in tablespoonful doses in the course of the twenty-four hours.
  - R Tincture nux vomica, 10 grammes; Extract of cinchona, 5 grammes; Malaga wine, 200 grammes; Syrup of orange, 100 grammes. M. Sig.—Three dessertspoonfuls per day.

The tincture of nux vomica is to be regulated so as to administer from 3 to 8 drops in the twenty-four hours, according to the age of the patient. The two mixtures are given from the first day of the disorder. Under this treatment, the basis of which is the local application of chromic acid, Lescure has obtained the best results. The author has so far observed

fifty-four cases of diphtheritic angina, all of which have been treated exclusively by the method indicated, with entire success.

#### PREPARATION OF GLYCERIN SUPPOSI-TORIES.

Professor J. P. Remington, in the *American Journal of Pharmacy*, gives the following directions as to the preparation of glycerin suppositories:

The problem which has confronted the pharmacist has been to combine a comparatively large quantity of glycerin with an inert body, capable of giving the requisite solidity to the mass, and at the same time to be soft enough to liquefy in the rectum. Very many formulas have been in existence, but in the writer's opinion none give as much satisfaction as the following:

Sodium carbonate, gr. xl; Stearic acid, gr. lxxx; Glycerin, Zii Zii.

Dissolve the sodium carbonate in the glycerin, add the stearic acid, heat carefully (preferably by the use of a water-bath) until effervescence ceases; the solution is then poured into a suppository mould to make twelve suppositories. There is no necessity for cooling the moulds with ice, although there is no objection to this in warm weather. As each suppository contains about ninety per cent. of glycerin, they must be protected from the action of moist air, which has a tendency to liquefy them. Several expedients are resorted to. Each one may be wrapped in tin-foil, or quickly dipped in melted paraffin, or each one inclosed in a small glass vial without a shoulder, and made for the purpose of holding one suppository.

### IODOFORM INJECTIONS IN THE TREAT-MENT OF TUBERCULOSIS OF JOINTS.

In reference to iodoform injections in tuberculosis of joints, the *New York Medical Journal* of August 27 quotes Dr. Curtis as saying that "he has found the injection beneficial in some cases, and in others he has seen no benefit from such injections."

The reports which may be read in the various medical journals concerning this common operation and the results that follow are far from uniform, and many are decidedly unfavorable.

Little has been said about any particular method of using the iodoform for injection, or the treatment which should follow its use, conditions that are necessary for the success of any operation.

DR. DARLING (New York Medical Journal, lvi., No. 18) reports a few completed cases from Professor Nancrede's clinic at Michigan University Hospital, to illustrate the value of the method adopted by him, and to show the uniform success which has followed the operation.

The emulsion used is composed of ten per cent. iodoform in a mixture of equal parts of water and glycerin. This mixture is boiled half an hour to thoroughly sterilize, and a fresh supply is prepared for every injection. That part over the joint selected for injection is carefully washed and covered with an antiseptic pad as in all important operations.

A small trocar is used, to which can be readily attached the syringe containing the emulsion. These instruments are carefully sterilized, and all air is driven from the syringe at the time of filling.

The joint should be carefully punctured at any safe point, and all fluid evacuated by gentle pressure. A recently-sterilized three-percent. solution of boric acid is then used to wash out the cavity. This may be repeated until the fluid returns clear.

The syringe is then attached to the canula, and one to three drachms of the emulsion is slowly injected. The iodoform is diffused about the cavity by kneading and manipulating the parts. The canula is withdrawn and the puncture carefully sealed with collodion and cotton.

The joint may then be fixed by a splint, and rest maintained for several days or until the time for the next injection.

The second injection may be made in one to three weeks, according to the extent of disease present, the amount of the drug employed, and the results following the injection, for success depends upon the continuous action of the iodoform; so that with a small absorbing surface but little is required, while a larger surface needs a greater amount.

These injections are frequently made without the use of an anæsthetic, and after two or three hours the patient does not complain of pain, unless a large amount has been injected.

CASE I.—L. C., female, aged six years. Two members of her mother's family had died of tuberculosis. While playing with some school-mates in September, 1890, she received a slight injury to the left ankle. No attention was given to it at the time, but three days later it began to swell. She continued to use it until the following February, when she had to begin the use of crutches on account of pain.

About April 1, 1891, a plaster-of-Paris band-

age was applied, by which rest was maintained for four weeks with no good results.

Examination of joint showed that it was partially disorganized, freely movable, with some crepitus, tenderness, and a great amount of swelling.

On June 19, 1891, the first injection of the iodoform emulsion was used, a second injection was made July 29, and a third on December 3.

The fourth and last injection was made March 3, 1892; four weeks later she began to use the ankle. She now walks, and is apparently cured.

CASE II.—C. R., male, aged ten years; mother living; father died of tuberculosis. Three years ago the patient fell into a posthole, sustaining so slight an injury that no attention was given to it at the time. A few days later the right wrist became swollen and painful; the hand was partially disabled, and since last August has been entirely useless. There is much swelling on the dorsal surface, and the least movement causes intense pain. One year after the fall the left leg began to give trouble near the hip-joint, and a large abscess soon developed near the surface. This has been recently opened, and disoharges freely. Examination of granulation tissue from its walls confirmed the diagnosis of tuberculosis. On the roth of March the wrist-joint was injected and put at rest. Little pain was experienced; the swelling soon diminished and there was marked improvement. Four weeks later a second injection was made, and the parts were kept at rest for ten days; the splint was then removed, movement was permitted, and a few weeks later, when the patient left the hospital, he had a very useful wrist, quite freely movable and free from pain.

CASE III.—C. S., a female, aged six years; admitted to hospital January 18. Mother living; father died of consumption. The child has never been strong, often complaining of pain in the chest. Three years ago the child slipped on an icy sidewalk and fell; shortly afterwards began to complain of pain in right knee. About a year ago she began to have pain in right hip-joint and swelling of the entire limb. Has not been able to use the limb for four months. Does not sleep well unless under the influence of anodynes, is very feeble, and much emaciated. Diagnosis: tuberculous disease of hip-joint. Extension was immediately applied, and on February 18 the hip-joint was injected with iodoform emulsion.

Prior to this time an abscess had formed in the tissues on the outer side of the thigh. On February 24, after evacuating all tubercular detritus and washing out with sterilized boricacid solution, the cavity was injected, but the disease had so far advanced that after an injection some weeks later it had to be opened, but the comparatively prompt healing showed that all tubercular tissue had been destroyed. On March 28 the Thomas splint was applied and the patient put on crutches. At the present time she is walking about the ward without the splint, slightly supported by one crutch, free from pain, and the diseased joint apparently cured. It is not necessary to say that her general condition is greatly improved.

CASE IV.—Mr. C. C., student, aged nineteen years; entered hospital December 16, 1891. Parents living, but father has had repeated hemorrhages from lungs. When nine years old his knee began to swell; was treated that time by the actual cautery, and apparently recovered. About a year ago, on account of exposure to cold, the parts began to swell again. He did not suffer much pain, but the muscles of the leg began to waste away and the knee became flexed. On December 17 the leg was straightened; the knee-joint was injected with the usual preparation of iodoform and put in a plaster cast. On January 9 he was discharged much improved.

The success of these operations probably rests upon the aseptic method of performing them, maintaining complete rest of the joint, and not using the second injection until the first had done its work. We must not forget that tuberculous lesions are slow in recovering, and those of joints prove no exception to the rule.

# BICHROMATE OF POTASSIUM AS AN EXPECTORANT.

In the Brooklyn Medical Journal, Dr. J. H. HUNT contributes an article upon the treatment of bronchitis and other conditions in which expectorants are needed, by the administration of bichromate of potassium. He recalls the fact that seventeen years ago Dr. Hutchins recommended to him the employment of one grain of bichromate of potassium triturated with nine grains of sugar of milk and mixed with twenty teaspoonfuls of water, as a remedy for severe suffocative bronchitis occurring in young chil-So extraordinary were the results produced that Dr. Hunt has constantly employed the drug since 1875. He states that the only article of importance which he has been able to find concerning it was one of Dr. Drysdale, of Cannes, France.

Dr. Drysdale believes that the bichromate of potassium has a specific action or elective affin-

ity for certain organs and tissues, and that its action is most marked on the mucous membranes of the respiratory passages, nose, eyes, and mouth, and on that of the stomach and intestines; on the skin, liver, and kidneys, the fibrous tissues, periosteum and bone.

Hunt's experience with the drug has been confined to diseases of the respiratory mucous According to this author, it is best administered in a freshly-prepared solution. The physician may readily carry it in the form of a triturate, which is readily dissolved in water at the bedside; or tablet triturates containing  $\frac{1}{\sqrt{n}}$  of a grain may be used. These triturates contain the minimum dose for a child one year old. Hunt claims that the bichromate of potassium is readily borne by the youngest infant, but that it should not be given within a few minutes of feeding with milk. To a child one year old he gives as much as  $\frac{1}{30}$  of a grain to the dose, if oppression and suffocation are impending, and then diminished at one-hour intervals. Drysdale says that no more than 1 grain should be given per day, but Hunt claims to have exceeded that amount without bad effects, instructing the attendants to diminish the dose if it acts like an emetic, but not to diminish the frequency of its administration. When it is rejected by the stomach it is without nausea or after-irritating effect. Hunt gives 10 grains of the powdered triturate, or a corresponding number of  $\frac{1}{80}$ -grain tablets, to be dissolved in twenty spoonfuls of water, with the best effect. This is probably due to the minute subdivision of the drug through trituration.

Not only in bronchitis, but also in coryza or influenza, or when the child "catches cold," is the bichromate of potassium to be given.

# THE ACTIONS OF CAFFEINE AND OF THE PRODUCT OF DISTILLATION OF COFFEE.

To elucidate the action of caffeine on nutritive changes, KEERLEIN (Revue de Thérapeutique Générale et Thermale; Pflüger's Archiv, t. lxi. p. 165) has instituted a series of experiments, using the apparatus devised by Geppert. The apparatus consists essentially of a chamber to receive the air, connected with a canula furnished with a valve. The animal (a rabbit, for instance), upon which tracheotomy has been performed, is made to breathe into the chamber. The expired air, having been deprived of the carbon dioxide, is returned into the chamber by means of a second canula. By this ingenious method, the cham-

ber, after each respiratory movement, receives a quantity of oxygen equal to the difference between the quantity of this gas contained in the inspired air and that contained in the expired air. This difference, in one word, represents the total quantity of oxygen consumed by the animal. It was found that caffeine, in doses sufficiently small as not to produce any spasmodic symptoms, increased the amount of oxygen consumed in the proportion of sixteen, seventeen, and nineteen per cent. On the contrary, the product of distillation of coffee, which is especially charged with caffeol (C<sub>8</sub>H<sub>..</sub>O<sub>.</sub>), exercises no influence whatever in regard to the consumption of oxygen. Therefore, to judge from the results of these experiments, caffeine and coffee are not economical substances; but that, on the contrary, they are stimulants to nutrition, and the effects which they produce are undoubtedly the result of a direct action on the nervous system.

THE ACTION OF QUININE, ATROPINE, PILOCARPINE, ANTIPYRIN, AND ANTIFEBRIN ON THE ELIMINATION OF URIC ACID BY THE URINE, AND ON THE NUMBER OF LEUCOCYTES IN THE BLOOD.

In an able research, J. Horbaczewski (Revue de Thérapeutique Générale et Thermale, September 20, 1892; Sitzungsberichte der K. K. Wiener Akademie der Wissenschaften, t. c., sect. 3, p. 101) appears to have demonstrated the relation that exists between the number of leucocytes in the blood and the quantity of uric acid eliminated under the influence of alimentation. When, under the influence of food, the leucocytes increase in number in the blood, there is, at the same time, an increase in the elimination of uric acid. Under certain circumstances, the leucocytes give rise to the formation of uric acid; and, on the other hand, this is also dependent on the disorganization of the leucocytes, which undoubtedly takes place in the organism, especially in the case of mammals. In other words, the chemical substances which act upon the leucocytes influence the production of uric acid, and inversely. It has long been established, particularly by the researches of Ranke, Kerner, Prior, Kumagawa, and others, that quinine diminishes the elimination of uric acid; and, according to Binz, the drug similarly decreases the number of leucocytes in the blood. This has been confirmed by recent researches.

Atropine, in daily doses of 1 milligramme,

has, in three cases, produced the same effects as quinine,—that is, a lessening in the number of white cells in the blood and in the amount of uric acid eliminated by the kidneys.

With the hydrochlorate of pilocarpine the results have been different,—that is, there is an increase in the number of leucocytes and a correlative increase in the quantity of uric acid. The dose of the drug administered by the mouth was I centigramme in each of the three cases observed, and of 11/2 centigrammes in the fourth instance. In other experiments performed on the lower animals, the pilocarpine given hypodermically, in doses of from 1/2 to 3 centigrammes per kilo of the body-weight, only produced an increase in the size of the spleen. This result is the more remarkable, since the drug is an excitant of the contractile elements of the muscular fibre; it has a similar action on the walls of the intestine, causing a constant The author calls attention to the contrast existing between the effects produced by quinine and those caused by pilocarpine. Quinine, without influencing the contractile elements at all, diminishes the volume of the spleen; while pilocarpine, acting on these contractile elements, produces an increase in the size of the same organ. The observer believes that these changes in the spleen, caused by the two medicaments, occur independent of any action exercised by the drugs on the contractile elements of the organ.

Antipyrin, in doses of 2 grammes, and antifebrin, in amounts of .5 gramme, produce what may be called opposing results,—that is, a diminution in the quantity of uric acid eliminated by the urine, and an increase in the number of leucocytes in the blood. The author affirms, therefore, that the actions of antipyrin and antifebrin, on the one hand, and the effects of quinine, on the other, are not identical, or at least cannot be considered as such.

Kumagawa has observed an increase in the elimination of uric acid under the influence of large doses of antipyrin, and an increase in the elimination of nitrogenous principles under the action of large doses of antifebrin. These two drugs, according to the author, influence nutritive changes differently from quinine. For example, under the action of antipyrin there occur no atrophic changes in the spleen, as it happens in the case of quinine. Finally, the influence exercised by the latter drug on the production of leucocytes differs from that of antipyrin and antifebrin, which, in large doses, increase the number of said leucocytes in the blood.

# THE ACTION OF ALCOHOL ON THE CIRCULATION.

The evidence that we have regarding the influence that alcohol exercises on the bloodpressure is mainly contradictory. Gutnikow (Revue de Thérapeutique Générale et Thermale, September 20, 1892; Zeitschrift für Klin. Med., t. xxi., fasc. i. and ii. p. 153, 1892) has endeavored to clear up the subject by conducting a series of experiments upon curarized dogs. To these animals, under such conditions, alcohol was administered by the mouth in ascend-From the results obtained the author has drawn the following conclusions: 1. Alcohol produces a diminution of the arterial pressure, due to a depression of the vaso-2. Alcohol enhances the work motor centres. 3. Alcohol does not influence of the heart. the pneumogastric nerve:

# CITRIC ACID AS A MEANS OF STERILIZING WATER DURING EPIDEMICS OF CHOLERA.

According to J. DE CHRISTMAS (La Médecine Moderne), a weak watery solution of citric acid is a sure means of depriving water of cholera The author made a series of experiments with cultures of cholera. A few drops of a watery solution of said cultures were placed by means of sterilized pipette in a watery solution of citric acid, of various strength, and well mixed. After fifteen minutes, a drop of this mixture was placed in beef bouillon, slightly alkaline, and the tubes put in the incubator at a temperature of 32° C. An examination made in from twenty-four to fortyeight hours revealed the fact that a solution of citric acid of the strength of 4 in 10,000 was sufficient to suppress the development of the cultures, a solution of 6 in 10,000 almost destroyed them, while a solution of 8 in 10,000 always kills them. Control experiments showed that a feeble quantity of citric acid mixed with bouillon exercised no influence in the development of the cultures. Pieces of linen dipped in solutions of cholera cultures became sterilized, in about fifteen minutes, in a solution of citric acid of the strength of 8 in 10,000. From these results the author concludes that citric acid may be of great service in times of cholera to sterilize all the water used. Every twenty-four hours a solution should be prepared in porcelain vessels, holding each from ten to twelve litres of water. To the water of one of these vessels ten grammes of citric acid are added, and stirred until the whole is well dissolved. This solution has a slight acid taste, and may be

used as such, or mixed with wine, syrup, etc., for drinking and other purposes. The solution is well borne even by children a year old. It does not cause diarrhoea, nor has it any deleterious influence on the teeth. The author has never observed any bad effects produced from its use, and highly recommends it to be employed especially in localities where cholera appears to be endemic.

## THE THERAPEUTIC USES OF ASAPROL.

SACKLER (La France Médicale) has made an interesting series of observations regarding the therapeutic applications of asaprol. tails numerous cases of various disorders in which the drug produced satisfactory results. In the first place, he found the new remedy most valuable as an antithermic and intestinal antiseptic. In typhoid fever it diminished the temperature and allayed the cerebral symptoms. In influenza it worked with good effect and promptly, after quinine and antipyrin had failed. In three cases of pneumonia, accompanied with high fever and delirium, asaprol effected a rapid cure. Several cases of acute tonsillitis in adults and children rapidly yielded to the action of the remedy. It was also of service in the treatment of boils. and in that of infectious diseases accompanied with albuminuria, and in which the albumin disappeared from the urine in a short time. As an analgesic, it was found successful in sciatica, intercostal neuralgia, tic douloureux, in the pains of muscular rheumatism, and even in those occurring in the lower extremities of alcoholic drinkers. In three cases of asthma. the new agent relieved two and produced a rapid cure in the third. Asaprol was found particularly useful in the treatment of acute articular rheumatism, acute polyarticular rheumatism, and subacute polyarticular rheumatism. One case of the polyarticular character of the disease, occurring in a young servant girl, seventeen years of age, was cured in twentyfour hours. Another case of the same nature, occurring in a man aged thirty-two, was cured in four days. The drug was in these instances as valuable as the salicylate of sodium. author refers to fourteen other cases in which the drug produced the same happy results. Seventeen cases of the subacute disorder vielded completely in from three to four days. The author, finally, affirms that in the majority of cases of acute and subacute articular rheumatism, asaprol is an excellent remedy, and is well borne, even by patients suffering from disorders of digestion, and who were unable to

take antipyrin or the sodium salicylate. In only two cases did the drug produce slight nausea. In the majority of instances it is better to begin with doses of from 2 to 4 grammes. which may be increased according to the requirements of the individual case. Asaprol never produced cerebral symptoms, vomiting, or other untoward effects. It was administered with success in patients suffering at the same time with vomiting and diarrhoea. The remedy frequently caused an increase in the amount of urine voided in the twenty-four hours. In many cases of rebellious chronic rheumatism, or of rheumatism accompanied with successive subacute attacks, asaprol did good, and, when suspended, patients asked for the remedy. In such instances, although it produced no cures, the remedy calmed the pains, and thus relieved suffering. The observations of the author. which number sixty, have been confirmed by Dujardin-Beaumetz. Stackler prescribes asaprol in cachets of from .5 to 1 gramme each, or in solution of the strength of five per cent. It may, in this way, be administered in beer, coffee, anise-water, etc. Solutions of the strength of from two to five per cent. may be employed for gargles, vaginal, urethral, and rectal injections. Ointments of the strength of 1 in 3 are also used. Asaprol is incompatible with the salts that precipitate lime, the soluble sulphates, bicarbonate of sodium, and iodide of potassium.

### THE DIETETIC MANAGEMENT OF PUL-MONARY TUBERCULOSIS.

In a recent number of the *Medical News*, Dr. E. F. Wells, of Chicago, contributed an article upon the dietetic management of pulmonary tuberculosis, and pointed out the necessity of keeping up the strength by proper food, in view of the marked wasting which always accompanies this disease.

He recommended that bulky articles of diet which have but little nutritive value, requiring at the same time great digestive power, should be absolutely forbidden. The bill of fare he recommended is as follows:

On Rising, 6 a.m.

Hot Milk and Vichy.

Hot Meat-Broth.

Tea, made with Milk.

BREAKFAST, 7 A.M.

Rare Steak or Loin-Chops. Mutton-Chops, with Fat.

Bacon or Ham, with Fat.

Eggs. Saratoga Chips.

Fried Mush.

Toast, with Cream or Butter.
Oatmeal, Wheaten Grits, or Rice, with Cream.
Fruit.
Coffee or Cocca, made with Rich Milk.

Potatoes.

LUNCH, 10 A.M. Milk. Meat-Broth. Eggnog. Stale Bread. Zwieback. DINNER, 12.30 P.M. Beef-, Mutton-, or Chicken-Broth. Oyster- or Turtle-Soup. Raw Oysters. Fish Raw Clams. Poultry. Roast Beef or Mutton. Game Beans. Green Peas. Asparagus. Spinach. Potetoes. Cauliflower. Celery. Pickles. Lettuce. Tomatoes. Stale Bread. Graham Bread. Corn Bread. Fruits, with Cream. Cakes. Custarda Pie. Milk Coffee. Milk LUNCH, 3.30 P.M. Milk. Clabber Konmiss Ham or Tongue Sandwich. SUPPER, 6.30 P.M. Thick Meat- or Fish-Soup Cold Meats. Meat Salads Crackers Graham Bread. Stale Bread. Fruit Jellies, Meat Jellies. Neufchatel or Cottage Cheese. Fruit. Cakes. Milk Coffee. Eggnog. Milk Tes. LUNCH, 0.30 P.M. Hot Milk. Clam Bouillon. Beef-Tea.

With this food he believes that large quantities of liquid should be taken, even though it contains no more nourishment than an ordinary cup of tea or coffee, which should always be modified by the use of rich milk or cream. He believes that it makes little difference whether dinner be taken in the middle of the day or at 6.30 in the evening. Foods containing starch, sugars, and fats are well borne, providing there is little or no fever; but if fever is present, animal foods in very concentrated form. with fresh fruits and non-starchy vegetables, are useful. If flatulence and indigestion exist, the farinaceous articles of food should be taken very sparingly; and if constipation is present, fruits, coarse vegetables, and Graham bread The reverse is, of course, the should be eaten. rule in the advent of diarrhœa.

Tubercular patients should, of course, be impressed with the importance of regularity of methods of living and eating, and should be told that these are as important as the administration of drugs.

Dr. Wells insists, very wisely, that in many instances it is better for the patient to remain at home than to travel about to strange resorts.

While cough should not be encouraged, the patient should be encouraged to expectorate whenever it is possible.

### MECHANICAL TREATMENT OF ACUTE RHEUMATISM.

Dr. Wallbridge, of Decatur, Ill., contributes an article to the St. Louis Medical Journal upon this subject.

After pointing out that in some cases of

rheumatism all the remedies which we are accustomed to employ are sometimes futile, he records his employment of mechanical means, including calisthenics, for the purpose of breaking up adhesions and smoothing rough articular cartilages, with the general object of restoring the competency of the joint.

He also recommends stroking and kneading of the part affected in the centripetal direction, thereby stimulating the lymphatics and venous currents and all the surrounding tissues to greater activity. He records in his paper five cases treated in this manner. In all of them movements were increased in force as the patient progressed, and in all of them improvement took place. In several of these cases persistent medicinal measures had entirely failed to relieve the patient. It may be well under these circumstances, in addition, to administer some of the standard remedies, but this is not always necessary. In the case of sciatica, he recommends that the patient should lie down upon a table, flat upon his back, and raise the affected part as high as possible until the pain becomes severe. The farther the leg is raised from the table the less will the pain be when the patient is walking By alternating these about or lying down. movements with periods of rest, and by introducing passive movements for active movements, the scope of the limb can be increased to an extraordinary degree.

Finally, when the limb has regained to some extent its normal position, when the man is standing erect, the patient is directed to walk upon his heels in order to put the posterior portion of his leg upon the stretch. If this exercise is carried on twenty minutes in each day, in order to thoroughly exercise the parts and yet not exhaust the patient, beneficial results will accrue.

# THE TREATMENT OF FILARIA SANGUINIS HOMINIS.

DR. Manson contributes to the London Lancet an article upon this subject, and states that his experience in regard to the action of thymol on the filariæ of the blood coincides with that of Surgeon-Lieutenant-Colonel A. Crombie, as detailed in the Lancet of August 13, 1892. Soon after Surgeon-Lieutenant-Colonel E. Lawrie's article on this subject appeared in the Lancet of February 14, 1891, the author had an opportunity of trying thymol in the case of a negro in whose blood both species of African filaria sanguinis hominis diurna (major) and filaria sanguinis hominis perstans (minor) abounded. This patient took

thymol regularly for over two months without any effect whatever on his blood parasites,—at all events, at the time,—and six months later they were quite as abundant and just as active as before treatment commenced. The attempt to cure filarial chyluria by the administration of a parasiticide, as suggested by Surgeon-Lieutenant-Colonel Lawrie, is founded on a misconception of the true pathology of this disease and of the part played by the filaria in its production. The filaria stands to chyluria very much in the same relationship as rheumatic fever stands to heart-disease and gonorrhœa to urethral stricture: it starts the disease process, but its constant presence is not necessary for keeping it up. To attempt, therefore, to cure chyluria by trying to kill the filaria is as illogical and as useless a proceeding as to attempt to cure established heart-disease by salicylates or stricture of the urethra by astringent injections. This is evident if we consider the order of events in the production of chyluria. as follows: A parent filaria is lodged in the thoracic duct. In some way not yet understood it injures the walls of the vessel, causing ulceration or inflammatory thickening. time this lesion leads to stenosis of the duct. Pari passu with the development of the stenosis the thoracic duct on the distal side of the stricture dilates, owing to the rising eccentric pressure from accumulating contents. After a time the stricture becomes so narrow that the lymph and chyle no longer find their way past it to the left subclavian vein. They seek, however, to reach the blood by another route; a retrograde movement down the thoracic duct sets in, and so, travelling by way of the pelvic lymphatics, the lymphatics in the walls of the abdomen, and the anastomosis between these and the lymphatics of the upper part of the body, the chyle from the intestines and the lymph from the lower extremities find their way into the circulation. Possibly there are other routes, as by the lymphatics of the œsophagus, diaphragm, and back; it is certain, however, that a common course pursued is that described, which is very much the same as that pursued by the blood in the case of obstructed portal circulation. To accommodate this increased and diverted chyle and lymph circulation the lymphatics by which it passes become enlarged and in many places varicose. The tendency to varicosity is very evident in such places as the scrotum, mucous membrane of the bladder, or wherever the lymphatics are abundant and feebly supported. In many instances these varices, where superficial, can be seen or felt and their nature readily recognized. If the inguino-femoral glands are involved, the varicose glands, so characteristic of filaria infection, are produced; if the scrotal. lymphatics are in the track of the regurgitating lymph and chyle, the equally characteristic lymph scrotum may be produced. Sometimes the varix is apparent on the surface of the abdomen even, as in the case related by Sir William Roberts, and in another by Havelhing. That these varices are really part of an anastomosis, conveying chyle from the abdominal viscera to the blood, is proved by the nature of their contents; these are usually milky-white or slightly red-tinted chyle, not lymph, clear and limpid, such as comes from the legs. As the lacteals are the only source of chyle, these chylous contents of the varicose lymphatics must have come from that source, and the route followed must have been the retrograde one described. Now, if the lymphatics of the bladder happen to be involved in the compensatory anastomosis, and if they give way, as the lymphatics of the scrotum so frequently do in similar circumstances, the result is a leakage of chyle into the bladder, and chyluria. It is evident from this that the embryo filariæ, although they are generally present in the blood and urine in chyluria, have nothing whatever to do with its production. This is further proved by the fact that in some few cases of genuine and persistent tropical chyluria no embryo filariæ can be found either in blood or urine. In such cases the parent filaria must have died after injuring the thoracic duct, or possibly there may have only been a male or an unimpregnated female parasite present. Further, although the parent filaria was necessary for the production of the lesion in the thoracic duct in the first instance, its continued presence there is not necessary for the maintenance of the So that whether the filaria which originally wrought the mischief dies or lives is a matter of no consequence as affecting the chyluria; the stricture of the duct, once produced, is permanent, and the chyle will continue to flow along the compensatory anastomosis, and perhaps from time to time burst the walls of the varix and appear in the urine. That this is the pathology of most cases of chyluria is proved by more than one post-mortem examination, as well as by a multitude of observations on the living subject. This being the case, it is difficult to see in what way benefit could accrue from killing either the embryo or the parent filaria, or how an anthelmintic, even supposing it were effective as such, could possibly cure chyluria. Many declare they have cured chyluria by drugs; but those who

say so should bear in mind that nearly every case of chyluria ceases spontaneously from time to time, and also recurs spontaneously, no matter what treatment is adopted. It is altogether probable that Surgeon-Lieutenant-Colonel Lawrie's cases recovered while taking thymol, but it is not probable they recovered permanently, or in consequence of taking this drug; and so with Dr. Walsh's cases referred to by Surgeon-Lieutenant-Colonel Crombie. A knowledge of the pathology of chyluria, elephantiasis, and filarial disease in general teaches us that our endeavors ought to be directed rather to keeping the parasite alive and in a healthy state than to interfering with it and worrying it into conditions of ill health in which the functions of gestation are imperfectly performed. There is a considerable body of evidence to show that under normal conditions the filaria is innocuous, and that it is only when abnormally located, or when it acts as an irritant, or when from some cause the contents of its uterus are prematurely evacuated, or when it dies, that this parasite becomes a danger to its human host.

Some striking evidence of the nature of the connection of filaria nocturna with elephantiasis has recently been obtained by the writer, which has an important bearing on this point in the treatment of filariasis. Through the kindness of Surgeon-Major Elcum (Cochin), Dr. Manson obtained 88 slides of blood drawn during the night from 88 natives of Cochin, a district of India in which elephantiasis is excessively prevalent. Of these 88 Cochinese, 14 had elephantiasis and 74 were healthy. Of the slides from the 74 healthy subjects, 20 contained filaria nocturna embryo in abundance. Assuming that these 74 Cochinese fairly represented the general population of Cochin as regards liability to filariasis, we may conclude that about one individual in every three and a half in Cochin is infested with filariæ. Of the 14 slides from the 14 cases of elephantiasis, only one contained filariæ. At first sight this result might seem to be conclusive against the filarial origin of elephantiasis. A little reflection will show, however, that this is far from being the case; that, on the contrary, it is a very strong argument in favor of this doctrine. For why should the subjects of elephantiasis enjoy this apparent comparative immunity from the filaria in a region where it is so extensively prevalent, unless it be that the filaria is in some way connected with the elephantoid condition? The fact is that the immunity is apparent only. Elephantiasis has for its remote and originating cause obstruction of the lymphatic circulation in the part affected. This is universally admitted.

The writer believes that the cause of this obstruction in the case of elephantiasis is an embolism of the afferent vessels of the lymphatic glands by prematurely-expelled ova from an aborting female filaria. If there is obstruction of this sort in a gland-guarded lymphatic area, such as the lower extremities, then it is simply impossible for filaria embryos to traverse the glands and enter the circulation; the implicated parts are cut off, as it were, from the blood. Therefore it is that, although there are filariæ in the blood in these cases, it is impossible for the embryo filariæ proceeding from the parent in the implicated area to enter the cir-This shows the importance of protecting the filaria and 'the danger of injuring it. If in these fourteen Cochinese the filaria had remained healthy,-never aborted, never obstructed the lymphatics,—there would have been no elephantiasis. Therefore he holds that, once established in the human body, the filaria should be left alone,—protected rather than persecuted. Pathology indicates that the proper treatment of chyluria is in principle the same as the treatment of acquired varix in any inaccessible re-This should be rest, elevation, lowering of the tension in the lymphatic vessels by the use of saline purgatives, limited and appropriate food, and abstinence from fluids as much as possible. Certain drugs have been vaunted as specifics for chyluria; none of these have given him success of a permanent character. porary recovery from time to time is the rule in chyluria, and the drug which was being used at the time the urine cleared spontaneously, from healing of the rupture in the varix in the bladder, is often credited with the cure. It is difficult to understand how a drug introduced by the mouth can possibly cause the closure of a gaping varix in the bladder.

THE TREATMENT OF ANÆMIA FOLLOW-ING POST-PARTUM HEMORRHAGE BY HYPODERMOCLYSIS.

Dr. Onur-Onurrowicz contributes to the *Medical Record* the report of an interesting case:

On February 24 the author was called to see a patient who was in a state of great weakness and extremely anæmic from post-partum hemorrhage. The patient had had four normal confinements; all children were born at term, and are alive to-day. No miscarriage had occurred previously. The menstruation had been regular and normal in quantity.

About December 22, 1891, she had normal menstruation, or, at least, thought she had.

Four weeks afterwards, when she again expected it, she lost but a few drops of blood. She felt well, with the exception of a strong desire for well-seasoned and sour food, such as herrings, sauer-kraut, etc.

It was, so far as the patient remembers, on February 14 that she had a rather considerable loss of blood from the vagina, which was caused by a fall on the floor. The hemorrhage lasted three days. Afterwards she felt quite well until the evening of February 23, when she became somewhat chilly. During the following night labor came on, and on February 24, at 5 A.M., the feetus was born, and with it an enormous quantity of blood was discharged. Blood continued to flow until 2 P.M., when the author first saw her. The quantity of blood she had lost could not be stated exactly; a certain estimate was possible from the fact that it had soaked through the thickness of two mattresses and gathered in a large pool on the floor beneath. She must have lost at least two quarts of blood. As she was rather anæmic before the hemorrhage occurred, and was not a robust person, this was a very serious matter.

When Dr. Onuf-Onufrowicz arrived he found the woman deathly pale, with hardly perceptible pulse. She complained of a peculiar oppression in the region of the heart, of nausea, and dizziness. The slightest movement of her head caused everything apparently to turn around her. When she closed her eyes she had the sensation as if her entire body were dead. She was still losing blood constantly, although it flowed but slowly. After irrigating the vagina with a one-per-cent. solution of salicylate of sodium, and thoroughly disinfecting his hands, the physician made vaginal examination. The uterus was rather soft. The cervix was dilated sufficiently to let two fingers pass in easily. The placenta could be felt as a very soft, pulpy mass adhering to the walls of the uterus. It seemed impossible to loosen the placenta without injuring the walls of the uterus and tearing the pulpy placenta to pieces, which would probably have left detached pieces of it in the uterus. As the blood was still flowing, immediate action was required. Therefore he wiped the uterine cavity out with a piece of aseptic gauze soaked in turpentine, and tried to stimulate the organ into contraction by Crede's method. When by this procedure the hemorrhage ceased, the general condition of the patient required the fullest attention.

One quart of a .7-per-cent. watery solution of chloride of sodium was injected into the rectum, to which two ounces of whiskey had been added. All the water was absorbed. Preparations were

then made for infusing a saline solution into the femoral artery, according to the method of Dr. Dawbarn. This method impressed the writer by its apparent simplicity, which seems to enable the general practitioner to perform it almost at any time, as the apparatus required—viz., a Davidson or fountain syringe, a soft rubber catheter, and a hypodermic syringe—are usually at hand, and as the technique seems to be very simple. In spite of this, however, the efforts were without success.

After making connection between the Davidson syringe and the catheter, both of which had been thoroughly disinfected, the needle of a hypodermic syringe was pushed into the skin below Poupart's ligament, just where the pulsation of the right femoral artery could be felt. In order to have the least blood-pressure to work against, the needle was directed with its point towards the foot, keeping it at an angle of about sixty degrees with the axis of the thigh. At first no blood came through the needle. The needle was then taken out and tried for the second time without success. The panniculus adiposus of the patient (though she could not be called a fat person) was rather strongly developed. This may have been the cause of failing to strike the artery; it is probable the needle was not introduced deep enough.

But whatever may have been the cause, no further trials were made. For the purpose of injecting the fluid into the subcutaneous cellular tissue, the needle of the hypodermic syringe was connected with the catheter, which at its other end was connected with the Davidson syringe. The skin of the upper thighs was chosen as a suitable location for the infusion. The needle was introduced into the subcutaneous cellular tissue, and the solution injected (sodium chloride, 7 parts; water, 1000 parts), which was kept as hot as the hand could bear, until a rather tense tumor had formed on the surface. Then the needle was taken out and the procedure repeated in another place. The injection was made in about ten different places on both upper thighs. A little more than a pint of the solution was injected into the subcutaneous cellular tissue. The salt water was promptly absorbed, since in the course of six hours the swellings produced by the injection had entirely disappeared.

The general condition of the patient had improved during the injection, which had lasted about half an hour. The pulse had become fuller, the feeling of oppression and both the nausea and dizziness had diminished, and her face had regained some color. Judging from experience in this case, the writer thinks that

one quart of fluid, or even more, could be easily introduced into the subcutaneous cellular tissue. In a case of urgency, however, it might be better to infuse into the artery.

After examining through the abdominal walls, the uterus walls were found well contracted and no blood flowing. The fœtus was then examined. It was completely enveloped in a mass of coagulated blood; it was soft and pulpy, evidently by maceration, but it was still sufficiently preserved to allow an estimate of its age. It was three inches long, and had the appearance of a fœtus at the end of the fourth or beginning of the fifth month. Accordingly the patient must have mistaken uterine hemorrhages during the pregnancy for menstruations. Of both placenta and membranes nothing could be found among the blood-clots expelled.

On visiting the patient at 8 P.M. her general condition was satisfactory. She still felt oppressed and dizzy, but less so than before. She had the sensation as if her left arm was dead. Pulse pretty good, about 120. Temperature, 96.4° F. The vagina was again irrigated with a one-per-cent. solution of salicylate of sodium, and a pint and a half of water was injected into the rectum. This water was partly absorbed and partly expelled.

On February 25 the patient complained of headache and of pain in the various spots where the saline solution had been injected subcutaneously. The feeling of oppression had nearly disappeared. Thirst was present. No loss of blood. Uterus rather well contracted. Towards evening the patient felt chilly, and her temperature rose to 101° F. Two grains of calomel were administered, as her bowels had not moved for several days. Irrigation of the vagina with a one-per-cent. solution of salicy-late of sodium t. i. d.

February 26, A.M.—The patient has had four evacuations of the bowels since yesterday. The pain where the subcutaneous injections had been made is nearly gone. Headache is still present. The temperature has risen steadily since when it was first taken; it has reached 104.4° F. at 11 A.M. Quinine (15 grains) was ordered. At 2 P.M. the temperature is still 104.4° F., so the same dose of quinine was given again. In the afternoon a considerable quantity of coagulated and liquid blood is passed per vaginam. The patient receives 15 grains of fluid extract of ergot, subcutaneously, and the uterine cavity is irrigated with a one-per-cent. solution of creoline. This irrigation produces violent pain, and morphine has to be given subcutaneously to relieve it. In the evening the patient complains of nausea, but has no pain. The hemorrhage, which was promptly checked by the ergot, has not returned. The temperature has come down to 98.2° F. at night.

February 27.—The patient slept well during the night. She has but little nausea. 15 grains of the fluid extract of ergot are given again hypodermically in the forenoon. At noon the placenta is expelled. It is a soft, pulpy mass, which is infiltrated with pus and has a most offensively foul smell. Accordingly, the lochiæ smell very foul too. Irrigation of the uterus with a sod. salicyl. solution after the expulsion of the placenta, which irrigation is repeated at night.

February 28.—The odor of the lochiæ is much less offensive than it was yesterday. Severe headache. Pain in the left arm and leg, chiefly in the elbow-joint. There is no redness nor swelling. Tongue somewhat coated. Appetite rather poor. The temperature has been rising steadily since yesterday noon; it reached 103.3° F. this forenoon, and went down to 101.6° F. in the evening. Ordered quinine (30 grains) in two doses. Irrigation of the vagina with sod. salicyl. solution twice. Castor oil as a laxative.

February 29.—Pain in the left arm and leg less severe. Intense headache, which is highly increased by the slightest movement of the head. Temperature, 98.2° F. in the morning, 99.6° F. in the evening. Ordered morphine internally to relieve the headache, which is the most prominent symptom.

March 1.—The condition of the patient is the following: She looks very anæmic; lips somewhat bluish; skin rather dry. Skin and conjunctivæ had yellowish hue, the latter especially, where covered by the lids. The breasts are flabby and of somewhat dark color; a colostrum-like liquid can be pressed out of them. Body and extremities free from swell-No meteorism. The tongue, which ings. showed a thick coat the day before, looks much cleaner to-day, but shows some fissures. Lungs free; 24 respirations per minute. Heartsounds quite distinct. The second sound is somewhat prolonged. Action of the heart regular; pulse rather full, regular, 120 beats per minute. There is some enlargement of the spleen, the dulness in its long diameter being somewhat increased from above downward, say seven finger-breadths in one and five in the other direction. The percussion-sound is almost flat. Edge of the spleen distinctly palpable. The cervix is considerably swollen and admits two fingers easily. No infiltration of the parametrium or peritoneum. The lochial discharge has nearly lost its odor. Pain in the right elbow and knee more intense. The patient has also pain in the right shoulder-joint, and the sensation as if cold water was poured on these joints. On inspection, no redness, no swelling is visible, but there is some sensitiveness to pressure. At II A.M., soon after the examination was made, the patient had a chill. The temperature, which was 99° F. in the morning, rose to 104.4° F. in the evening. No antipyretics were used; the patient got some moderately strong wine and fluid food, such as milk, raw or soft-boiled eggs, beef-tea, etc. Morphine to relieve the headache.

March 2.—Has still pain in the left arm and leg, and also in the abdomen. The temperature has fallen to 101.8° F. At 11 A.M. the patient has a chill, and in the evening temperature reaches again 104.4° F.

March 3.—The pain in the abdomen has disappeared after the administration of one tablespoonful of castor oil. The headache has diminished; the head aches only when the patient moves it. In the left arm and leg she has now no real pain, but the sensation of pricking, which appears only at times: Temperature, 98.8° F. in the forenoon, 101° F. in the evening.

March 4.—The patient is in much better spirits, inclined to joke, and believes that she would be perfectly healthy if the headache had entirely left her. Temperature, 100° F. in the forenoon, 100.4° F. in the evening.

March 8.—Since March 5 the temperature has not exceeded 98.6° F. The patient is still rather weak, has some headache, but feels well otherwise.

March 22.—Has been out of bed for the last few days. The headache is gone, but she still feels dizzy at times. No pain in the back, no retention of the urine, very little discharge from the vagina, fair appetite. The patient has recovered so far that she can be safely discharged. During the whole course of the disease the function of the bladder was normal, or nearly normal, and there was no excessive secretion of sweat at any period of the disease.

To sum up, the predominant features of the case were the following:

- 1. The course of the temperature is characterized by three typical chills and by the irregularity of the curve, which repeatedly ascends very suddenly and descends just as suddenly and steeply. Partly, however, the type is masked by the quinine given in the beginning of the disease.
  - 2. The slight icterus which was present.
  - 3. The enlargement of the spleen.

- 4. The pain in the joints characterized by the want of any objective sign.
  - 5. The violent headache.

The case was one of sepsis, in which the general symptoms of infection prevailed. The course of the temperature was similar to that observed in cases of tropical malaria, which the disease resembled in many other points. The etiology, however, leaves no doubt as to the nature of the case in question.

Cases of septicæmia do not occur frequently in this period of antiseptic treatment.

In defence of not having made proper use of antiseptics, which the author thinks may be a charge brought against him, he states that the circumstances under which he had to act were most unfavorable. The fœtus had probably been dead for several days or weeks before it was born. The placenta was decomposed. The surroundings of the patient, especially the clothes and linen with which she came in contact, were exceedingly unclean. Rapid action was necessary, as the life of the patient was in danger; and though the hands, instruments used, and the genitals of the patient were treated strictly antiseptically, a complete asepsis could not be attained under the circumstances mentioned. Finally, the woman was very much predisposed to the invasion of microbes in consequence of the weakness which resulted from the hemorrhage.

### THE TREATMENT OF THE GASTRIC DIS-ORDERS OF PHTHISIS.

In a very interesting article upon the subject of gastric disorders of phthisis, in the American Journal of the Medical Sciences, Dr. Habershon gives a treatment which he believes to be most useful in the treatment of this pitiful complication of a still more pitiful disease.

It is, perhaps, a truism to assert that the treatment of dyspepsia and of vomiting in phthisis should be directed towards subduing the progress of the lung-disease. It is certain, however, that while local measures are necessary and even indispensable in some phases of the malady, they will eventually fail or have no permanent effect if the general treatment is neglected. This is especially the case in all the early stages of phthisis, or where gastric disorders have developed in a tubercular subject before any disease in the lungs could be detected. In cases of dyspepsia which seem unusually intractable it is a wise precaution to examine the lungs, not on one occasion only, but repeatedly. An early clue may thus be

gained as to the cause of the delicacy, and appropriate remedies applied. For such cases, as well as for all forms of atonic dyspepsia, it is unnecessary to insist on the great importance of pure and bracing air, and of residence on dry soil, to supplement the medicinal treatment. Nowadays, with our numerous convalescent homes, this is not impossible even in the outpatient practice of our large hospitals. The author confines his remarks to the remedial measures found of value in the classes of vomiting where the symptom is of sufficient importance to need attention.

In all forms of vomiting certain general principles must be borne in mind.

Food of a bland and easily digestible kind should be ordered, and nothing irritating to any part of the mucous membrane of the alimentary tract should be allowed, either in the shape of food or drink,—such, for instance, as condiments, vinegar, acid drinks, or alcohol in any concentrated form.

When vomiting is frequent or severe, it is hopeless to attempt to treat the patient unless rest in a recumbent position is insisted upon. In such cases also liquid nourishment is advisable.

This is obvious enough when the symptom is the result of gastritis, but it is equally applicable in the distressing vomiting that sometimes results from the cough.

The sympathetic vomiting from irritation of the pulmonary branches of the vagus is most intractable and difficult to deal with. The vomiting will, however, subside if the patient is kept in bed and put on liquid diet. Medicinal treatment alone without these precautions will invariably fail. The object should be to allay any irritability of stomach that may be present, and bismuth in the form of carbonate or subnitrate, with bicarbonate of sodium and some sedative, such as opium or morphine, hydrocyanic acid, or bromide of potassium, should be given internally. Soda-water is a valuable sedative, and is suitable either alone or with milk.

It must be remembered that the tendency of vomiting from this cause is to cease after a time as the disease in the lungs progresses.

Under the name of mechanical vomiting, there is frequently irritability of throat or stomach present.

In the throat-affection, soothing and slightly astringent gargles will do much to lessen the irritability, and this applies also to all forms of pharyngeal irritation, from simple catarrh to the more painful forms of ulceration of soft palate or pharynx. It is of advantage to use a sedative gargle of bromide of potassium and

opium in combination. To these may be added a mild astringent such as borax. Some cases of longer duration are benefited by more powerful astringents,—alum or tannin,—but these should be combined with opium or some topical anodyne. For ulceration of the fauces a powder of iodoform, borax, and morphine dusted or blown upon the ulcerated surface once or twice daily will frequently give great relief. When the throat is not especially sensitive the difficulty of expelling the sputum often gives rise to exhausting efforts of coughing. This is not always easy to deal with.

The internal use of expectorant remedies combined with iodide of potassium (three to five grains are usually sufficient), or alkalies, will do much to aid in the expulsion of secretion. Opiates may be given in small doses when the amount of secretion is small and there is an undue irritability of the smaller bronchial tubes. If, as in some cases, there is any degree of spasm in the small bronchi, iodide of potassium and carbonate of ammonium in small doses are invaluable.

Care should be taken not to press ipecaçuanha, in any of its forms, where the cardiac action is feeble. But all these internal remedies are sometimes unsuccessful, and then inhalation For moist inhaling, Habershon prefers a sedative alkaline inhalation such as the vapor coninæ of the British Pharmacopæia, or, better still, a mixture of the succus conii with ammonia (ten drops of the liquor ammoniæ to the pint of hot water). When the cough is violent at night or in the early morning the dry inhalations are of more service from their greater convenience. Drops of the liquid remedy are placed upon the sponge or cottonwool in an oro-nasal respirator, or in the form adopted by Coghill. Menthol or thymol dissolved in rectified spirit or spirit of chloroform may be used alone, or in combination with compound tincture of benzoin and eucalyptus oil. A favorite prescription of the writer's is as follows:

R Ol. eucalypti, zii;
Tinct. benzoin. comp., ziii;
Thymol. v. menthol., zi;
Spiriti chloroformi, ad zi.
Ft. inhalation.

Ten drops at a time to be used on cotton-wool in an oro-nasal respirator.

Oil of peppermint alone is equally effective in lessening irritability, but is disagreeable to some on account of its smell.

By far the most obstinate cases to deal with are those in which there is excessive irritability of stomach; by this is not meant catarrhal gastritis. Vomiting follows shortly after a meal, and is often preceded by a sense of suffocation, without pain and with or without violent cough (sometimes the cough is very slight). Recourse may then be had to a drug which Sir George Paget first suggested to the author, and which he has frequently used with complete success. This is liquor potassæ (5 to 10 minims for a dose), usually with calumba, with sometimes a few minims of Batteley's solution of opium or of laudanum added.

The success of this remedy is probably due to the fact that it counteracts the excessive acidity of stomach which is so frequently present, and which is itself sufficient to keep up a certain amount of irritability of the gastric mucous membrane. It is also of value where the bronchial secretion is viscid, from the property of alkalies of rendering such more fluid.

In a patient under the writer's care at the time this paper was written, this was the only medicinal remedy which had the least effect in controlling the obstinate vomiting.

The well-known combination of creosote and opium is frequently of great benefit.

Finally, if all other remedies fail to control vomiting, a plan has been recommended by a French author for which he claims absolute It has the disadvantage of being success. somewhat heroic. He injects hypodermically one-sixth to one-fourth of a grain of morphine in the epigastric region, the patient being, of course, kept in bed or in the recumbent position. In three cases Habershon has used this remedy with considerable success. In the case of C. B., a man aged about thirty-five years, food was rejected invariably from a few minutes to half an hour after it was taken. There was no evidence of gastric catarrh. The tongue was thinly furred, but not red or irritable in appearance. The throat was sensitive, but not inflamed. The pulmonary disease was confined to the left lung. No remedies such as those mentioned appeared to have the smallest effect in reducing the vomiting, and the man was becoming rapidly emaciated from his inability to take food. One-fourth of a grain of morphine was injected in the epigastric region, with the result that for the whole of the following week there was no return of vomiting. At the beginning of the second week a smaller dose (one-sixth of a grain) was injected. The patient vomited two or three times in the course of the following few days.

In the two other cases the effect was more temporary, but neither of the patients could be kept in bed. This remedy, from the limited experience given above, is well worthy of a trial in cases that are occasionally met with in which vomiting from this cause is exceeding intractable.

In all cases of vomiting with the cough, the patient should be recommended not to exert himself after a meal, but to lie down for half an hour or an hour, while in extreme cases he should be confined to bed.

The treatment of pharyngeal irritability has been already alluded to, and for the relief of the more severe forms of ulceration of epiglottis or larynx, which cause both cough and vomiting from the difficulty and pain in deglutition, there is little to say.

In this distressing affection palliatives are the only remedial agents. The powder referred to-of borax, iodoform, and morphineaffords great temporary relief, and the cocaine spray, applied before a meal, will often render a patient able to take food who would otherwise find it almost an impossibility. Several forms of apparatus have been devised to direct the spray upon the epiglottis or into the larynx, by the fixture of a small nozzle at right angles to the horizontal tube leading from the bottle holding the liquid. A solution of one to two per cent. of cocaine is the most suitable strength, but care should be taken not to apply the remedy too frequently, as symptoms are very easily produced from absorption of the drug.

Much might be said on the treatment of gastric catarrh, but the space is limited; suffice it to say, that absolute rest and unirritating forms of nourishment—fluid diet, if necessary—and alkaline sedative remedies are the well-known principles on which such cases should be treated.

It is impossible to lay too much stress upon the importance of successfully coping with the various gastric disturbances that arise in the course of phthisis. The elements of success are assured when a correct diagnosis has been made as to the cause of the symptoms.

#### IPECACUANHA IN DYSENTERY.

DR. A. H. HART, of Suez, contributes an article on this subject to the *Lancet*, in which he points out that the specific action of ipecacuanha in dysentery is due to its dual *modus operandi* on the intestines, as (a) muscular sedative and (b) secretory stimulant. The most characteristic symptom of dysentery is tenesmus (Dr. Woodward). There is such exaggerated peristaltic contraction of the rectum and lower portion of the colon that the

patient goes to stool from thirty to two hundred times in the course of the twenty-four hours. or sits there for half an hour at a time, straining violently, but passing little or nothing (Dr. Hilton Fagge). The patient is under the delusion that he will pass something that will do him good. The fault does not lie in the irritant to be expelled, but in the irritability of the intestinal muscles. According to Heubner, the average quantity of evacuation passed by each patient was found to be only from twenty-eight ounces to forty-two ounces. The great difficulty we have to deal with, then, in dysentery is exalted peristalsis. Ipecacuanha meets the difficulty by acting as an intestinal muscular sedative. A large dose of ipecacuanha stops tenesmus quite suddenly, and smaller subsequent doses prevent its return. With a return of the muscular coat to its normal condition the other coats lose their irritability, and the accompanying inflammation coincidently subsides. The mucous membrane is then in a suitable condition for the second action of ipecacuanha to come into play, -- namely, secretory stimulation. We have now to deal with an enteritis, and here ipecacuanha acts in the same way as in bronchitis. Stimulation of the mucous membrane with secretion of mucus is effected by direct action on the peripheral endings of the gland-nerves or minute ganglia (Dr. Whitla). Ipecacuanha has the same beneficial effect in dysentery, therefore, as it has in bronchitis. The action of ipecacuanha on the liver is that of a powerful stimulant. In dysentery the hepatic functions are in abeyance and bile is absent from the stools. Ipecacuanha directly stimulates the hepatic cells, so that very shortly after its exhibition the colorless, slimy stools become feculent. In the words of Dr. Ewart, "Ipecacuanha is a non-spoliative antiphlogistic. a certain cholagogue and unirritating purgative. a powerful sudorific and harmless sedative to the heart and muscular fibres of the intestines." According to this lucid and comprehensive description ipecacuanha is a perfect remedy for dysentery. In a certain proportion of cases ipecacuanha undoubtedly fails. Dr. Maclean says, "Where it fails it is because it has been given too late, when structural changes incompatible with life have taken place in the affected intestine, or from structural diseases of the spleen, liver, and kidneys, or the combined ravages of the malarial and scorbutic cachexias." In those cases where ipecacuanha fails when success ought apparently to attend its administration, the fault probably is to be found in the diet. For three hours after the first dose of ipecacuanha only a little ice should be sucked. and after that a little iced soda-water and milk. Beef-tea or bread, or very light foods, are fatal to the successful administration of ipecacuanha, and to this cause a great many of the failures of ipecacuanha are doubtless to be attributed. On the second day the ipecacuanha can be reduced in quantity and supplemented by salicylate of bismuth, quinine, naphthol, and opium. Milk should still form the staple article of diet. Later on farinaceous foods and soups may be carefully given, but a return to solid meat should be deferred as long as possible. Mr. Chowdhovry remarks, "that the large doses of ipecacuanha, which have been found to be of great use in treating the dysentery of India, are often inadmissible by reason of the nausea thereby invoked preventing the patient from taking a sufficient amount of nourishment." Considering that the success of the treatment by large doses of ipecacuanha depends upon the condition of the patient in not taking any nourishment during the period of its administration, the failure in Mr. Chowdhovry's cases was evidently due to the fact that his patients were trying to take a "sufficient amount of nourishment," thereby actually causing nausea and preventing a cure. There are cases where ipecacuanha fails when administered by the mouth which may be very successfully dealt with by ipecacuanha and opium enemata.

# TREATMENT OF CHRONIC BRIGHT'S DISEASE.

In an article in the Medical Record, Dr. H. B. MILLARD contributes an interesting paper on this subject. After pointing out that there are, of course, cases in which the kidney is far beyond the condition in which treatment can possibly do good, he details several cases in which treatment was followed by very extraordinary results. The patients are placed upon full doses of the iodide of potassium, and in addition take Fowler's solution in large doses, with corrosive sublimate; or, in other cases. the protiodide and biniodide of mercury. He regards mercurial preparations as absolutely indispensable, and has used with great success ergotinine, caffeine, strophanthus, sparteine, arsenic, and the various preparations of iron. He also believes nitro-glycerin and strontium to be of similar value. If uric acid exists in excess he neutralizes it by means of Vichy, Vals, or similar waters, and also employed piperazinwater with phenocol.

He sends his patients to Evian, Vichy, or

Royat, and if the hepatic functions are greatly deranged, to Carlsbad, Marienbad, or Vichy.

# HYDRONAPHTHOL IN THE TREATMENT OF CHOLERA.

In the *Medical News*, Dr. D. Stew-Art, Lecturer on Clinical Medicine in the Jefferson Medical College, contributes an article suggesting hydronaphthol as a remedy for cholera.

In a bacteriological study of the action of the drug he found that we have in it a medicament of extraordinary value, for it has been actually demonstrated that a proportion as high as 1 to 7000 has an undoubted inhibiting effect on the development of the commaspirillum, and that a proportion of about 1 to 2000 (equal parts aqueous solution and culture medium) exerted a prompt germicidal action. As I part to 7000 parts equals about a grain to the pint, or to the avoirdupois pound, and as the contents of the small intestine, when the latter in its entire length is thoroughly distended, cannot amount to more than nine or ten pints, it would follow that, under any condition, but ten grains of hydronaphthol, if in solution, would be required to render the entire small intestine antiseptic against the comma-spirillum, preventing its development, while about forty grains, under similar conditions, would disinfect the intestine, promptly killing any spirilla present. Despite these calculations, it is, of course, somewhat difficult to accurately formulate the exact dose necessary to create immunity against cholera, or that sufficient to exert a bactericidal effect in cases of the developed disease. Fortunately, we have in hydronaphthol one that is non-toxic in doses probably much larger than would be sufficient for the latter effect. In cases of simple diarrhoea, in dysentery, and in enteric fever, frequently the author has administered a half-drachm in the twenty-four hours, continuing this often for weeks, totally without effect other than beneficial, and it is quite certain that doses much larger than these may be similarly used. slight inhibition of gastric digestion that hydronaphthol produces is readily obviated by the administration of the latter in keratin-coated pills, which are soluble in the duodenum, or, if the drug is ingested in powder, capsule, wafer, or emulsion, by taking it between meals. without effect on duodenal digestion.

As a prophylactic against cholera, when, from exposure, the disease seems imminent, hydronaphthol should be taken in doses of from 8 to 10 grains four times daily for three

or four days, and, subsequently, in from 5- to 8-grain doses with the same frequency. amount will probably at once exert an antiseptic effect, and at the expiration of twentyfour hours be germicidal. In early choleraic diarrhœa it should be used in quantities of 10 grains hourly, or even half-hourly, until from one to two drachms have been taken. Here it may be, and, indeed, by choice, should be, combined with an opiate. An overwhelming testimony exists as to the extraordinary benefit likely to accrue from a prompt resort to opium in the stage of preliminary diarrhœa, Sir George Johnson's most dangerous theoretic views to the contrary notwithstanding. extended experience of Sir Thomas Watson and Fergus, of Glasgow; Aitkin, Macpherson, Twining, Parkes, our own Flint, Sr., and many others who have passed through several epidemics, leaves no doubt as to the great utility of opium. Nevertheless, as pointed out, treatment by opium is only symptomatic, for this drug can neither destroy the commabacillus nor retard its development. apparently acts in early choleraic diarrhoea by checking the bowel irritation caused by the spirillum or its leucomaine. If, conjointly, a second remedy can be administered that will have a lethal effect on the spirillum, the ideal treatment of cholera, at least in its early stage, has been found.

THE COMPARATIVE ACTION OF ANTI-PYRIN, PHENACETIN, AND PHENO-COLL ON THE CIRCULATION AND BODILY HEAT.

In Notes on New Remedies is an original communication by Drs. Cerna and Carter concerning their studies of the physiological action of the three drugs named upon the circulation and heat functions. The conclusions arrived at in regard to the action of these drugs upon the circulation is as follows:

Antipyrin, in small and moderate amounts, produces a rise of the arterial pressure, this stimulating effect being due to an action upon the heart.

The lowering of the pressure by large or toxic doses is due, similarly, to a depressant action of the drug upon the heart. The remedy does not seem to influence the vaso-motor system.

Antipyrin causes an increase in the pulserate through paralysis of the cardio-inhibitory centres. The secondary decrease in the number of pulsations is of a purely cardiac origin, the drug exercising a depressant effect upon the heart itself.

Antipyrin, in excessive doses only, changes the hæmoglobin of the blood into methæmoglobin.

The main conclusions regarding the actions of phenacetin upon the circulation are as follows:

Phenacetin, in moderate doses, causes a rise of the arterial pressure by acting upon the heart, and probably likewise by a stimulating influence exercised on the vaso-motor system.

The reduction of pressure by the drug, in large amounts, is mainly of cardiac origin.

The remedy increases, in small doses, the force of the heart by a direct action.

Phenacetin increases the pulse-rate chiefly by cardiac stimulation, and possibly also by influencing the cardio-accelerating apparatus.

The drug reduces the number of pulsations, especially in large quantities, primarily, by stimulating the cardio-inhibitory centres, and, later, by a depressant action upon the heart.

They conclude, therefore, that—

Phenocoll, in ordinary amounts, has practically no effect upon the circulation.

Large doses diminish the blood-pressure by influencing the heart.

Phenocoll reduces the pulse-rate by stimulating the cardio-inhibitory centres. It then increases the rapidity of the pulse by paralyzing said centres. The final diminution is of cardiac origin.

Upon the blood itself phenocoll has no action. In their studies concerning heat phenomena the following results were reached:

Antipyrin, phenacetin, and phenocoll all fail to produce any effect on the heat functions of the normal animal.

Antipyrin produces a decided fall of temperature in the first hour after its administration in the fevered animal. This reduction is due to a great increase in heat dissipation, together with a fall in the heat production.

Phenacetin, both in septic and albumose fevers, produces a very slight fall of temperature during the first and second hours after its ingestion by the stomach, but the greatest reduction occurs the third hour after its ingestion. The fall of temperature results chiefly from a decrease in heat production, with a slight increase in the heat dissipation. The increase in dissipation is not as great as with antipyrin. Probably the delayed action of the drug depends on its insolubility.

Phenocoll causes in fever a very decided fall in temperature, which occurs the first hour after the administration of the drug by the stomach. This reduction is the result of an enormous diminution of heat production, without any alteration of heat dissipation.

Their experiments with antipyrin are in accord with the results obtained by Martin, Wood, Reichert, and Hare, together with Destree, and they have reached the conclusion that antipyrin reduces the temperature by a decrease in heat production, and that heat dissipation also falls with the production.

In their experiments with antipyrin the composite curve shows the rise of heat dissipation. They believe, therefore, that this phenomenon is effected through a thermotaxic rather than through a thermogenic mechanism. They further believe that phenacetin and phenocoll reduce the temperature by a decrease in the heat production through their action on a thermogenic nervous centre. The fact that all drugs here studied fail to produce any effect on the normal heat function proves that they affect these functions through the nervous system. Probably the fact pointed out by Hare in his excellent essay, that many investigators do not take into account other circumstances, such as tying animals down, and confinement in a box, may explain many of the results obtained by some observers in the normal animal.

In concluding this study, they think they are justified, judging from the results of their experimentation, in saying that of the three drugs in question, the safest for practical purposes, especially as regards an action upon abnormal temperatures, would be phenocoll. Phenacetin is slow, on account, no doubt, of its insolubility, and is comparatively feeble as an antipyretic. Antipyrin, it is true, is insoluble. and prompt in reducing feverish conditions, but its action upon the circulation, particularly upon the heart, is so pronounced, even when administered in therapeutic doses, that it is, for this reason, a dangerous substance to use. Phenocoll, on the other hand, is readily solurapidly absorbed, and, undoubtedly, promptly eliminated. Its power to reduce abnormally high temperatures is very decided, and it does this in therapeutic doses, without depressing the circulation. Phenocoll, therefore, would seem to be superior to antipyrin and phenacetin as an antipyretic.

### THE TREATMENT OF SCORPION-STING.

Banerjie contributes to the Lancet his opinion concerning the best treatment for the sting of the scorpion. He has treated forty-six cases of scorpion-sting between April and June, 1802.

Of this dreaded arachnid (Scorpio afer) there are four varieties: (a) dark brown, (b) reddish-brown, (c) one the color of prepared leather (pale yellow), and (d) one which is slate-blue. Of these the first and last are the most deadly. The first mentioned has the largest sting (half an inch long) and measures altogether four inches. The last, which is also most to be dreaded, measures from mandibles to telson half an inch to an inch and a half. The larger animal is sluggish, and prefers dusty and manure-like soil; the smaller is found in stony places, abounds in the hills, and can endure extremes of temperature. The patients all suffered in the same way, with, of course, constitutional modifications. The part stung was reddish and cedematous, and the pores of the sweat-glands were unusually distinct. Severe burning pain was complained of in the part and extended rapidly. In some free perspiration occurred and was followed by much excitement and delirium. Females did not suffer much, and children wept much, but without exhibiting severe local effects. Men of strong build suffered most, and in some instances were very excited; but resolute persons expressed no great suffering. In all cases the joint above the part stung was almost stiff, and in some there were febrile symptoms with severe headache. of the cases were treated with ipecacuanha poultices, as text-books recommend, but only with transient benefit, as, in addition, chloroform had to be used in stupes. This relieved all pain, but the erysipelatous swelling of the affected parts remained, and continued in severe cases for seventy-two hours, requiring still further treatment. In two cases chloroform alone was used and gave instant relief, but swelling remained in this instance likewise. In five cases hydrate of chloral pure and simple was rubbed into the It answered well, relieving pain instantly, and with this remedy there was no subsequent swelling. The action of chloral was, moreover, less evanescent than that of chloroform. In order to use it in a more convenient and more rapidly absorbable form it was liquefied with the addition of camphor (three parts of chloral and one of camphor), and to render its action still more rapid the part was punctured with a pin or needle before its application. Menthol-camphor and butyl-chloral-camphor were also found efficacious. Without wishing to depreciate the value of other methods, this treatment, which was found successful in twentyseven cases, will probably have a more extended trial from the profession in the tropics, in order that its value may be determined and its efficacy established.

# THE SURGICAL TREATMENT OF TRACHOMA.

SYDNEY STEPHENSON (Medical Press and Circular, January 25, 1893), after a review of the various surgical procedures applied to the treatment of trachoma, describes his own method of operating, and draws the conclusions which follow: He employs two kinds of forceps,--first, ordinary stout dissecting forceps; second, stirrup forceps modified from Knapp's pattern. The rollers in his instrument are nine or ten millimetres in length, and their surfaces are free from creases. Experience has convinced him that the comparatively small diameter—one to one and a half millimetres—recommended by Knapp is insufficient to allow the rolling action of the instrument to come into play when dealing with swollen tissues. In his instrument the diameter of each cylinder is at least three millimetres. Expression is indicated in the following conditions:

- 1. Follicular disease, in which discrete follicles are scattered over the surface of an otherwise normal conjunctiva. Here it is a simple matter to seize and crush each individual follicle with dissecting forceps, and beyond this nothing more need be done in the majority of cases.
- 2. In trachoma of recent origin, expression often yields excellent results. As a first step it is necessary to squeeze out the contents of any grains which project markedly above the level of the conjunctiva, and then to subject the retro-tarsal folds and the entire extent of the conjunctiva to the squeezing process. The instrument he prefers for this latter purpose is the stirrup forceps, and a word in regard to the way in which it is used may not be out of place. In the first method, which applies to either lid, one roller is placed on the cutaneous and the other on the conjunctival surface. The blades are then closed and the forceps firmly drawn towards the free margin of the lid, by which means the roller action is brought into play and the morbid material squeezed out from the conjunctiva. In the second method, which applies to the upper lid only, the latter is everted, one roller pushed deeply into the culde-sac, while the other is placed over the tarsal conjunctiva as near the free border of the lid as possible. The blades are then closed and the instrument drawn towards the free edge of the folded conjunctiva, so that each roller is in contact with mucous membrane only throughout the whole of these manipulations. In the third method, a swollen and granular fornix may be exposed and submitted boldly to the action of the forceps. The material thus ex-

pressed is often forcibly thrown to a considerable distance, and may fall into the operator's eye, an accident not unlikely to be followed by serious consequences. In order to meet this contingency it might be well for the surgeon to wear a pair of protective goggles. (Compare abstract on this page.)

In all these manipulations the conjunctiva passes through the forceps much in the same way as linen is passed through a mangle, with the result that the diseased material is extruded without damage to the actual conjunctival tissue. Knapp has pointed out that it is well to make traction on the forceps in as straight a line as possible, so as to preserve an equable pressure on all points of the rollers.

Since it is now known that the tarsus itself participates in the morbid processes of trachoma, it becomes of importance to subject that structure to considerable pressure during the performance of the operation. Further, the caruncle and the extremities of the superior fornix—which may be regarded as especial fastnesses of infectious material—should receive particular attention. In these positions the dissecting forceps may often be used with advantage.

3. In old and obstinate cases of trachoma expression at times affords results of an unexpected nature. The details of operation differ, however, in no respect from those already described. The painful character of expression leads many surgeons to employ a general anæsthetic, but personally he has never used anything but cocaine. All the lids may, if necessary, be operated upon at one and the same sitting.

It is noteworthy that the conjunctiva is extremely tolerant of the apparently fough treatment involved in the operation of expression. The softer material of the granulation breaks down long before the pressure used is sufficient to damage the conjunctiva itself, and the surgeon can at once judge when enough has been done, not only by the appearance of the parts, but also by the feeling of the tissue underneath the forceps.

After the operation it is well to encourage bleeding by the assiduous application of hot water to the closed eyelids. No dressing is needed; the eyes are simply rinsed out occasionally with a simple antiseptic lotion.

Ecchymosis of globe or of lids, redness of the conjunctiva, and some slight swelling of the eyelids may each or all follow the operation, although as a general rule there is remarkably little reaction. At the same time it is by no means rare for a grayish membrane to make its appearance on the palpebral conjunctiva a day or two after the operation. This seldom lasts for more than a short time, and portends no serious result. As a matter of fact, such membranes commonly follow any operative interference with the conjunctiva. One further point should be noted. Adhesions are liable to form between adjacent folds of conjunctiva, more especially in the lower lid, and such adhesions should be searched for systematically and broken down with a probe. To complete the cure of trachoma in any given case, expression may have to be repeated several times.

# THE DANGER OF INFECTION WHILE OPERATING FOR TRACHOMA.

The following editorial note occurs in the Ophthalmic Record for February, 1803: The use of the forceps for the cure of trachoma is not free from danger to the operator and assistants, since some of the blood full of microorganisms may, by accident, be thrown into their own eyes. This occurred to two surgeons some years ago while operating on a case. the same moment the material was thrown into the eyes of each. The one believing in the germicidal power of nitrate of silver at once expressed a willingness to have a few drops of a 10-grain solution put into each conjunctival sac. As his reward he escaped the development of a case of trachoma. The other declined to submit to this preventive measure. His punishment was a well-developed case of trachoma, which was not cured for a long time.

# THE TREATMENT OF BLEPHARITIS WITH CORROSIVE SUBLIMATE.

DR. F. DESPAGNET (Recueil d' Ophthalmologie, November, 1892) describes his method as follows: First, the condition of the lachrymal ducts must be examined, and these must always be in a healthy state. Then two sublimate solutions made with glycerin are prepared, one of a strength of 1 to 100, which the patient himself must use daily, applying it to the base of the eyelashes on the cutaneous surface. If through inadvertence or awkwardness he allows a little of the lotion to penetrate to the conjunctiva, the harm, at most, will amount to a slight sensation of burning, which can be stopped by an application of cold water. second solution is of a strength of 1 to 30, and is applied by the surgeon himself every two days. Besides painting the external base of the eyelashes as soon as possible, the excess of the solution remaining on the skin is removed with a little cotton, resting on the eyelid, so

that the moisture may not be absorbed into the eye in the act of winking. This solution produces a sensation of intense burning. Nevertheless, it is not so intense as might be supposed from the character of the solution, as the sublimate loses some of its caustic nature when it is dissolved in glycerin. It is understood that the base of the ulcer must be freed from crusts, and also the eyelashes, so that the medicament may come in contact with the tissue. From the first week of treatment the improvement is very marked, and it does not take more than two months, according to this author, to cure the most inveterate blepharitis, even that variety which induces a thickening of the outer edge of the lid, or, in other words, hypertrophic blepharitis.

### TREATMENT OF ULCERS OF THE CORNEA.

Barton Pitts (Annals of Ophthalmology and Otology, January, 1893) thus outlines his views in regard to the treatment of several types of corneal ulcer:

In superficial ulcers of a phlyctenular character he uses calomel, dusted in the eye, with considerable friction. Atropine in a solution of from two to four grains to the ounce is especially sedative in ulcers of the cornea associated with much inflammation of the conjunctiva. In ulcers not associated with acute inflammation he does not hesitate to use freely as a local sedative solutions of cocaine as strong as forty grains to the ounce. Hot applications, in the form of a large cloth or towel wrung out of boiling water, but never poultices, are both soothing and beneficial. He has reserved for the last the mention of an agent that has proved more than satisfactory to him in curing ulcers of the cornea. It does not deserve to be put in the same class with other local agents, but rather as the one and only agent, safe and certain, for the curing of ulcers of the cornea, so far as can be said of any artificial means of curing disease. He refers to the topical effect of the actual cautery. He considers it the safest and surest of all agents; even in superficial ulcers of a phlyctenular character he prefers to use it; and in deep ulcerations, involving the substance of the tissues, and likewise in extensive sloughs of the cornea, it is to be depended upon. Its action can be carefully limited to the diseased portion, destroying it without interfering with the nutrition of the healthy structures, and it leaves less opacity of the cornea than any other form of repair. His method of using it is first to cleanse the parts as thoroughly as possible with a 1 to 5000 solu-

tion of bichloride of mercury, and touch thoroughly the entire ulcerated portion of the cornea with the point of the platinum electrode heated to a red heat by an electric battery. battery useful for such a purpose, however, is inconvenient to transport, and expensive. For ordinary, occasional use, a silver probe or the point of a strabismus hook, heated in the flame of an alcohol-lamp to a bright heat and quickly applied, is equally efficacious and inexpensive. Such a procedure seems formidable, and is not always easily explained to the timid; but it is safe, quick, and marvellously efficacious in its effects. Of course an eye to be cauterized should be cocainized and fixed firmly by the pressure of the finger upon the globe, through the upper and lower lids, or the patient etherized, care being exercised that the cautery-point be limited to the diseased portion of the cornea. and the parts touched lightly, that the anterior chamber be not penetrated. Usually one application, if properly performed, is sufficient to bring about a healthy reaction, with healing. Should repeated cauterizations, at intervals of three or four days, be necessary, such can be safely done.

# REMARKS ON THE TREATMENT OF PURULENT CONJUNCTIVITIS.

A. A. FOUCHER (Annals of Ophthalmology and Otology, January, 1893) agrees with those authors who treat purulent ophthalmia by the use of cold, of nitrate of silver, and antiseptic Nitrate of silver, 15 grains to the ounce, helps to diminish the purulence, when the lid can be easily everted without causing much pain to the patient. He suggests as antiseptic washes a saturated solution of boracic acid, a solution of bichloride of mercury 1 to 5000, of cyanide of mercury 1 to 1500, of permanganate of potassium, or of peroxide of hydrogen, looking on them rather as astringent and cleansing agents than having any other use. In his practice he prefers the saturated solution of boracic acid, but would be willing to substitute for it the cyanide of mercury lotion. Cold, by means of ice applications, is highly recommended. Ice is objected to in the treatment of young children, and parents themselves are loath to accept it. In the case of the newly-born the chemosis is less marked than with adults, and the danger is therefore less imminent. For this reason he uses iced compresses in a great number of these cases; but when he deals with a serious case of purulent ophthalmia, even in a newly-born patient, and the case is accompanied with much swelling, he resorts to ice. at least for a few days, without the least hesita-

He does not scarify a fleshy chemosis. Sometimes blood depletion of the temples is practised with profit. He has never deemed it advisable to relieve constriction by incising the eyelids, whereas the ice always brought about sufficient reaction to render this mutilation useless. He states that corneal complications have been rare and of a trifling character with subjects whose treatment he has been in a position to control since the inception of the disease. In these cases, as well as in those in which corneal complications existed before he instituted the treatment, he continues to apply cold, and notwithstanding a prevailing opinion which, to the contrary, advises the suspension of this treatment in such cases, he is inclined to believe that an aggravation of these complications results from the use of warm compresses.

[There is no doubt that the proper application of cold is of the utmost service in the treatment of purulent conjunctivitis, but it is equally true that sloughing of the cornea, in many instances, is favorably modified by the proper application, not of "warm compresses," but of hot compresses, the temperature being at least 120° F., and so applied that this degree of heat is maintained.—ED.]

### NITRATE OF SILVER IN THE TREAT-MENT OF PURULENT CONJUNCTIVITIS.

- W. T. Montgomery (Annals of Ophthalmology and Otology, January, 1893) desires to emphasize, in the treatment of this disease, the following points:
- 1. The nitrate-of-silver solution, at least 60 grains to 1 ounce once daily. If the purulent discharge does not continue to lessen, increase the strength of the solution up to 120 grains to 1 ounce. He has not found it necessary to go above this. He has not had any bad aftereffects from the use of these solutions, as cicatricial contractions, staining of tissues, etc.
- 2. Make the application with the mediumsized camel's-hair brush, and be sure to brush the entire palpebral and retro-tarsal portions of the membrane.
- 3. Cleanse the eyes with as little irritation as possible. Wiping the eyes, and especially the use of the syringe or pipette for washing out the conjunctival sac, cannot be too strongly condemned.
- 4. The use of the iced compresses for at least one hour after each application of the strong solution. The best mode of applying these compresses is to have a dozen or more small pledgets of absorbent cotton on a block of ice, and change often enough to keep them

- cold. In adults and children old enough to express themselves he has found these grateful, and believes them to be a valuable aid in reducing the inflammation.
- 5. The antiseptic lotion least irritating to the eyes is the best, and the boracic-acid solution is his preference. Used in the manner here indicated, he does not know of any remedy which has given him greater satisfaction than the nitrate of silver in the treatment of purulent conjunctivitis.

### POULTICES IN OPHTHALMIC SURGERY.

DR. G. C. SAVAGE (Ophthalmic Record, February, 1893) records his experience with poultices in ophthalmic practice, and gives several cases in which this therapeutic measure served a useful purpose. His method is to order a poultice of flaxseed-meal to be applied, and to be renewed as often as it becomes cool or dry. In one case of abscess of the cornea a poultice was used in this manner for five days, resulting in absorption of the pus. In another case of cataract extraction with suppuration of the corneal wound, in addition to the use of nitrate of silver in the sloughing incision and the free employment of boracic-acid lotion, and also eserine, poultices were ordered, at first almost constantly and later intermittingly, and discontinued at the end of a week. Although the case was unfavorable in every respect (indeed, it looked hopeless), the redness, swelling, and suppuration subsided, and the pupillary membrane which was formed was divided at the end of four weeks, the operation resulting in good vision. Savage does not give in detail other cases, but refers to some where there was suppuration in the cornea or within the eye, and its progress was checked and the absorption of the pus promoted.

He concludes as follows: In all forms of ocular (not conjunctival) troubles attended by suppuration, a poultice is a therapeutic means of great power. It is never dangerous. In iritis of any form it will do good in relieving pain and lessening congestion. In inflammatory glaucoma, before an iridectomy is done, it will relieve greatly the suffering of the patient. In orbital cellulitis, if applied early, it will prevent suppuration. Flaxseed-meal has been used in all poultices. The proper consistency is attained as rapidly as possible by mixing the meal with boiling water on a heated plate. The mass is spread on half of a piece of cloth three inches wide and six inches long to the depth of an eighth of an inch and not entirely to the edge, when the other end of the cloth is folded

over it. The under surface is then applied to the eye, so that the upper and inner borders rest on the brow and nose, thus lessening the pressure on the eye. A piece of oiled silk four inches square is then placed over the poultice, and the whole is kept in place by a light four-tail bandage. When cool or dry, another poultice should be ready for application on its removal. A poultice should be in continuous use for the first twenty-four to forty-eight hours, even if the sufferer is much sooner relieved. Afterwards it can be used intermittingly as the indications may arise.

### EXTRACTION OF STEEL FROM THE IN-TERIOR OF THE EYE WITH AN ELECTRO-MAGNET.

ALVIN A. HUBBELL (Ophthalmic Record, February, 1893), in a most interesting paper, reports ten cases in which steel was extracted from the interior of the eye by means of the electro-magnet, and in his remarks writes as follows: In using the electro-magnet in a case in which the steel has either positively or probably entered the eyeball, it should be made to pass as directly as possible in the known location in lines of least resistance and through an area of least functional value. Sometimes the accident wound meets these requirements, but oftentimes it does not. If the steel has penetrated into the vitreous through the cornea near its margin, and through the iris and suspensory ligament of the lens, there is always great danger of adding further traumatism to the parts and especially to the lens. That part of the ball through which the magnet can be introduced with least danger to the structures and to sight, and at the same time most accessible to every point within the vitreous, is the sclera just in front of the equator of the ball, preferably, in most cases, on the outer side between the external and inferior recti muscles. It is better to make this sclerotic incision after dissecting up at the place chosen a small triangular flap of conjunctiva, or excising a piece and stopping the hemorrhage. The early use of the electro-magnet is preferable to waiting until pathological processes follow the introduction of the steel. Sometimes, it is true, the eye will tolerate steel for an indefinite period of time, perhaps for years, but this is the exception rather than the rule. By waiting, the steel becomes embedded in exudates, when the magnet cannot attract it at all, and if the eye then becomes inflamed, enucleation is the only safe treatment. The proper use of the magnet is usually so successful, when

applied early, that there is no alternative between immediate operation and delay.

The form of the electro-magnet, especially at the extension-points, is a matter of no little importance. The magnet itself should be as light as possible consistent with sufficient attracting power, and of a shape convenient for handling. The extension-point should be as near as possible to the coil around the core, and no longer than is necessary to reach the supposed location of the steel; certainly never more than two centimetres, and at the ends from a half to one and a half millimeters in diameter. The power of attraction diminishes very rapidly as the end is lessened in size or carried farther from the coil around the core. Again, the point should not be rounded, but flat at the ends, and also on the sides from the ends backward for a short distance, and by this means a larger surface of contact is presented and the holding power increased. In conclusion, Hubbell desires to emphasize anew the utility and benefits of the electro-magnet in ophthalmic surgery, to recommend its early employment, to call attention to a special form of the instrument, and to advocate a more general adoption of the sclerotic incision as the safest method of reaching steel when it lies at any point, supposed or known, in the vitreous humor or inner coats of the eye, even to the disregard of the original wound in many cases.

## PTOSIS AND ITS SURGICAL TREATMENT.

M. Brun (Paris Thesis; abstract in the Annales d'Oculistique, December, 1892), after an exposition of the different proceedings used for the cure of ptosis, describes and adopts the process proposed by Gillet de Grandmont. The main points in this proceeding, which has yielded the author good results, are as follows:

After having seized the superior eyelid with Snellen's forceps, the skin is incised parallel to the outer edge of the eyelid at a distance of three or four millimetres, and for about two and a half centimetres in length. Raising the two cutaneous sections, the orbicularis muscle is detached and excised in a corresponding portion, so as to lay bare the whole of the tarsal cartilage almost to the ciliary edge, and there comprises the Sappey orbito-palpebral muscle, commonly designated under the name of the tendon of the elevator. An incision is made of the thickness of the tarsal cartilage to the extent of about two centimetres parallel to the outer edge of the eyelid and at a distance of from two to four millimetres from its edge.

A curvilinear incision with an inferior concavity is made, extending from one extremity of the first incision of the cartilage to the This incision must be of the thickness of the integuments, so that the section must be equal to the estimate made of the extent of the ptosis. This estimate, moreover, is the most delicate point in the operation. Constant practice is required to do it with precision. Gillet de Grandmont measures the comparative distance from the outer edge to the eyebrow. With the aid of three stitches of catgut (00), the superior or orbito-palpebral section is sutured to the inferior or tarsal section without touching the skin. It is understood that the ligature with threads is not made until the pressure with the Snellen's forceps has been relaxed. It is not necessary to deal with the skin, since the drawing together is so easily accomplished that immediately after the operation nothing is noticeable but a cutaneous wrinkle corresponding to the natural palpebral line. This operation has the advantage of preserving the fold of the palpebral skin, of avoiding a vertical cicatrix, of gaining the elevating movements of the eyelid without calling into play the occipito-frontal muscle, and, finally, of shortening the elevator.

### TREATMENT OF REBELLIOUS BLEPHA-ROSPASM.

- M. VINCENT (Lyon Médicale, October, 1892; abstract in Recueil d'Ophthalmologie, November, 1892) suggests the following rules for surgical interference in the cases where other measure shave failed:
- I. Superior Eyelid.—The needle threaded with catgut is passed through a fold of the skin even with the frontal protuberance, and brought out again above the eyebrow, and then penetrates at the base of the eyelid. It is drawn under the skin so that it crosses the superficial layer of the tarsal cartilage and passes out at the edge of the lid. Three threads are passed through in this way, and the same operation may be done for the inferior eyelid, its cutaneous attachment being on the cheek-hone.
- 2. Horizontal incision of the external commissure of the eyelids to the extent of two centimetres.
- 3. Bordering the edges of this incision with the conjunctiva of the external cul-de-sac.
- 4. Tightening the ligatures, even to the production of a very pronounced ectropion. The formation of this temporary ectropion gives an opportunity to treat the corneal ulcerations, the starting-point of the blepharospasm; to

check the rubbing of the lashes on the cornea; to put the conjunctiva on the stretch, so as to allow the easy application of remedies; and, finally, the rolling up of the tarsal cartilages.

EXTRACTION OF CATARACT WITH REFER-ENCE TO THE AVOIDANCE OF EN-TANGLEMENT AND HERNIA OF THE IRIS, OR OF ATTENU-ATING THE EFFECTS OF SUCH ACCIDENTS.

NICATI (Archives d'Ophthalmologie, December, 1892) comes to the following conclusions:

- 1. Ordinary iridectomy prevents hernias, but it will not prevent incarceration.
- 2. Open iridectomy, made by putting the periphery of the iris on the knife and effecting the incision of the iris during the section, lessens the frequency of incarcerations and hernias, but does not prevent them.
- 3. Only a large iridectomy, made by placing the iris on the knife, seems absolutely effectual.
- 4. Cystotomy after the manner of Gayet, made at the same time the corneal section is performed, is a better prevention of capsular incarcerations than the other methods.
- 5. A corneal section effectually prevents a cicatrix from serious danger of hernia and of inclosure.

# RIPENING OF IMMATURE CATARACTS BY DIRECT TRITURATION.

BOERNE BETTMAN (Annals of Ophthalmology and Otology, January, 1893), believing that Förster's method of ripening cataract is open to many objections, for the past six years has practised direct trituration, which, in his opinion, has great advantages over the indirect method. In order to avoid an unnecessary rubbing of the cornea and squeezing of the iris, and to prevent an unwarrantable mutilation of the latter (iridectomy), he inserts into the anterior chamber, after having made an incision into the corneo-scleral margin, his trowelshaped spatula. The flattened end of the instrument is placed on the lens surface within the pupillary space. If the pupillary field is small, it is slid underneath the iris below and on either side, and the lens subjected to trituration. If the cataract is of the soft variety, the cortex may be seen to break down while being Ordinarily several days ensue manipulated. before any striking changes appear. The construction of his instrument—namely, its trowel shape—prevents contact with the iris, the shank being in a higher plane than the colored membrane. In his former cases he reported seventeen uniformly successful cases matured according to this method. The same results have followed his later operations. Bettman draws the following conclusions:

In none of these cases was trituration followed by any untoward symptoms, neither after the first operation or subsequent to the removal of the cataract. In all trituration was accomplished without doing an iridectomy. The withdrawal of the keratome, if not quickly executed, is followed by an outflow of a large quantity of aqueous humor, resulting in contraction of the pupil. As the tip of the trowelshaped spatula is small, no inconvenience results therefrom. It rests in the reduced pupillary area, and can be easily slid behind the iris and the covered part of the lens triturated.

The cortex rapidly underwent degeneration and vision proportionately decreased. So rapidly did the cataracts mature that extraction and restoration of useful vision were soon after accomplished.

In none of these cases did he experience any difficulty in removing opaque cortical substance. It was expelled in mass, owing, no doubt, to the greater cohesiveness of triturated cataracts than those matured through the natural method, where the cortex has undergone a more complete degeneration.

In all cases the vision was quite good on admission to the Infirmary. One counted fingers at ten feet, the other at eight, the third at six feet. They did not belong to the ambercolored variety, where the lens never becomes entirely opaque, and where entire loss of vision rarely ensues, but rather to the softer forms of nuclear cataract, having the broad striæ in the cortex, indicative of the softer variety.

# THE ACCIDENTS CAUSED BY INJECTIONS OF COCAINE.

Cocaine is so frequently used in ophthalmology that it is well for oculists to know the accidents which it incurs when it is given in strong doses; for instance, in hypodermic injections for operations on the eyelid, or in retro-ocular injections for enucleation. At one of the meetings of the Surgical Society of the year 1892, BERGER (Soc. de Chirur., 1892; abstract in Archives d' Ophthalmologie, November, 1802) gave an account of a mortal intoxication from cocaine in a patient who had received an injection of two soupspoonfuls of a solution of cocaine (1 to 50) for an operation for the radical cure of hydrocele. After the operation the patient became faint, and in twenty minutes was in complete coma, the face and limbs moving convulsively and the pupils dilated. He was then seized with tetanic rigidity on the right side, and finally died of cardiac syncope.

The medico-legal autopsy was made by M. RICHARDIÈRE, who made a statement on this occasion of the result of eleven autopsies of poisoning from cocaine. In the present case a general congestion of the lungs and of the meninges was found, besides a mitral insufficiency and lesions from alcoholism. The tunica vaginalis seemed absolutely normal, and did not communicate at all with the peritoneum.

M. Lechis did not admit that the method of anæsthesia by cocaine was responsible for the errors committed. He had demonstrated in the observations on death from cocaine which have been published that twice only the dose was less than 10 centigrammes, and these two deaths may be explained by other causes. So, until further knowledge, it should be admitted that the most manageable dose amounts to 10 centigrammes. Solutions of 5 or 10 per 100 must not be used, but those of 1 or 2 per 100 may be employed. Besides, with small doses considerable operations may be managed.

# THE MOVEMENTS OF THE IRIS, AND THE ACTION OF ATROPINE AND ESERINE ON THE PUPIL.

It is generally admitted, in order to explain the movements of the pupil, that there is complete antagonism between the oculo-motor nerve and the sympathetic. The oculo-motor presides at the contraction and the sympathetic at the dilatation of the pupil. At the instigation of Professor Schiff, MLLE. LITTAUER (Paris Thesis, 1892; abstract Annales d'Oculistique, December, 1802) has undertaken a series of exact observations, with the result of showing that the sympathetic remains entirely unaffected by the movements of the pupil. Mlle. Littauer has succeeded in cutting the oculo-motor in the cranium of a cat without touching any organ or important vessel. This done, she was able to study the effects of the section of this nerve and the actions of the excitations on the peripheral points. Mydriasis due to a paralysis of the third pair, myosis to irritation of this nerve. There is, therefore, no mydriasis by direct action on a dilatory nerve.

It was interesting to study the antagonistic action of atropine and eserine instilled simultaneously. Certain observations allowed Mlle. Littauer to think that the action of atropine was principally exerted upon the periphery of the nerve of the third pair and that of eserine on its central part. From these facts it would follow that the presence of atropine ought al-

ways to prevent the effect of eserine, for it cuts off the road for the action of the latter drug. It is known, in fact, that in practice eserine never prevails against atropine when the two are brought in antagonism. Nevertheless, as the present state of affairs does not allow one to be positive about this localization of the effects of atropine and of eserine, the question calls for a new research. To sum up the results of the observations of this author: The sympathetic must be deprived of all action on the pupil; it affects the vessels of the iris only slightly; the dilatation and contraction of the pupil depend upon the oculo-motor, and the myotic and mydriatic agents act directly upon it.

#### WARM SUBLIMATE SOLUTIONS.

AHL (abstract Archives d' Ophthalmologie, November, 1892), by means of a large number of bacteriological and chemical researches, has ascertained that the application of heat to solutions of sublimate increases their antiseptic power, while it diminishes their poisonous and corrosive effects. The following are his conclusions:

- 1. The antiseptic action of a solution is increased if it is heated to a temperature of 40° C.
- 2. A solution of 1 to 2000, or even of 1 to 1000, heated to 40° C., may be used without danger for deep-seated lesions of the lungs, of the pleura, and of the peritoneum, the bactericidal effect corresponding to that of a cold solution of 1 to 500.
- 3. A solution heated to 40° C. stimulates the generative action of the tissues and accelerates the healing process. On the other hand, a cold solution of 1 to 1000 has less antiseptic action than a hot solution of 1 to 10,000, because the latter penetrates farther.
- 4. Weak and hot solutions of sublimate may be used with perfect security, so far as the caustic effects are concerned.

### ABADIE'S METHOD FOR THE TREAT-MENT OF MIGRATORY OPHTHAL-MITIS.

E. BAQUIS (Annali di Ottalmologia, vol. xxvi. fasc. 4 and 5; abstract Archives d' Ophthalmologie, December, 1892) has been encouraged to experiment according to Abadie's method, as well as by the researches of Dr. Ovio, according to which weak sublimate solutions may be injected into the vitreous without causing chronic lesions and without causing the vitreous to diminish in any way the micro-bicidic power of

the sublimate solutions, no matter how weak they may be. The case was that of a woman twenty-six years of age, seriously injured in the left eye by a piece of broken crockery. There was rapid cicatrization, forming an adherent leucoma, but at the end of about three months irido-cyclitis occurred in the eye and serious sympathetic ophthalmitis in the fellow-eye. By means of an equatorial puncture the author injected three drops of a sublimate solution (1 to 500) into the sympathizing eye. next day there was marked improvement. The injection was repeated eight days later, and the results were again excellent. After a treatment of twelve mercurial frictions the reabsorption of the exudates in the pupillary field of the right eye was accomplished, so that ophthalmoscopic examination became possible, and vision was greatly improved. It is remarkable that this sympathizing eye then showed an intense neuro-retinitis. After six months the cure continued.

#### SURGICAL INTERFERENCE IN CASES OF SEVERE NEURALGIAS OF THE PELVIS.

BATUAUD (Revue Médico-Chirurgicale des Maladies des Femmes, November 25, 1892) holds that the common pelvic neuralgias are those associated with hysteria and neurasthenia. The operations done are laparotomy for simple exploration, which may be followed by the unilateral removal of the adnexa; or hysterectomy if the tubo-ovarian operation proves unsuccessful. He cites three cases of laparotomy which were perfectly successful; fifteen cases of hysterectomy after laparotomy proved unsuccessful; and, lastly, ten cases of hysterectomy, one of which proved fatal. analysis of the cases, Richelet believes that hysterectomy is preferable to laparotomy. According to Terrier, removal of the ovaries sometimes gives good and sometimes bad results.

Hysterectomy for neuralgia in neurasthenic cases is of no value. In two cases of hysteria the neuralgia was dispersed, only, however, to become centred in the arms. The author is not enthusiastic over the suggestion of hypnotism, but thinks it might be tried with advantage, as its results would not prove dangerous. In some cases the neuralgia is spontaneously cured, as in a case reported by Verneuil. This woman had suffered intolerable pain, and he concluded to perform a laparotomy; but, in the mean time, the patient had an attack of acute mani-

and as a result of this the neuralgic pain immediately ceased.

The non-operative treatment consists in the administration of morphine, being careful, however, to avoid the morphine habit, sand-friction, stimulating baths, anti-neuralgic liniments, and salicylates if indicated. If hysteria dominates, hydrotherapy, the valerinates, and static electricity are to be employed.

If the condition be that of neurasthenia, the alimentary canal should receive careful attention. Graduated exercises, massage, general electrization, and hypodermic transfusions are very useful.

# THE ANTISEPTIC MANAGEMENT OF WOUNDS.

SIR JOSEPH LISTER (Lancet, January 28, 1893), on the basis of laboratory experiments and of clinical experience, states that carbolic acid is far more efficient as a germicide in surgical work than is bichloride of mercury.

The sponges he prepares by washing well with soap and water and afterwards with soda; they are then washed thoroughly with water, and finally, after drying, are put again to steep in a 1 to 20 carbolic solution till they are required.

In his private work he purifies his sponges by putting them after the operation into a tank of water and allowing them to putrefy. The fibrin which clings among the pores of the sponges becomes liquefied by putrefaction. They can then be washed thoroughly clean of their fibrin, the washing being continued until the water is no longer colored red. The sponges are then put in a 1 to 20 carbolic solution and kept there. The 1 to 20 carbolic solution should be used for purifying instruments, the hands of the operator, and the skin of the patient.

This method is much more convenient for the operator than the process of boiling. to the length of time which the instruments should be kept in solution, this depends upon the care with which they are cleansed before putting them there. Any which have teeth should be brushed with a nail-brush before they dry, so that there will be no crusts of blood upon them which the carbolic lotion might require a considerable time to penetrate. Lister puts the instruments into a 1 to 20 carbolic lotion just before the patient is brought into the room; they are kept in during the administration of the anæsthetic and during other preparations, and this is quite adequate for the purpose. In purifying the skin of the patient it is not needful to apply

an antiseptic lotion for hours together; a few minutes' action of a r to 20 carbolic-acid solution is really sufficient. For purifying the eyelids before ophthalmic operations the carbolic lotion would cause serious irritation. In this special case a weak solution of corrosive sublimate, applied in compresses, is probably the best. It must, however, be continued for a lengthened period.

While carbolic acid is more trustworthy as a germicide for surgical purposes than corrosive sublimate, it is in other respects also greatly to be preferred. Carbolic acid has a powerful affinity for the epidermis, penetrating deeply into its substance, and it mingles with fatty materials in any proportion. Corrosive sublimate, on the other hand, cannot penetrate in the slightest degree into anything greasy; and therefore, as the skin is greasy; those who use corrosive sublimate require elaborate precautions in the way of cleansing the skin-treating it with oil of turpentine or ether, not to mention soap and water—to remove the grease, which it is essential to get rid of for the efficient action of the corrosive sublimate.

Lister does not even apply soap and water, trusting absolutely to carbolic acid, which by its penetrating power and great affinity for organic substances purifies the integument in a way that inorganic salts, like corrosive sublimate, cannot.

The sponges during the operation are washed in a r to 40 carbolic lotion.

Finally, since it is impossible to be always quite certain that the assistants have been careful, the wound is washed with a 1 to 40 carbolic lotion before it is closed.

THE INFLUENCE OF CHLOROFORM ON THE COURSE OF NORMAL LABOR,
AS STUDIED BY THE TOKO-DYNAMOMETER.

DOEHNOFF (Revue Médico-Chirurgicale des Maladies des Femmes, January 25, 1893) chloroformed eight parturients, and in the various stages of anæsthesia measured the intensity of the uterine contraction with the toko-dynamometer of Schatz, with the following results:

The tracings obtained showed that a paralytic action was exerted on uterine contraction.

The intensity of the contractions are diminished about one-half during full anæsthesia, and this diminution continues when the anæsthesia is prolonged. During partial anæsthesia the contractions become irregular as regards their mode of succession and their intensity.

When the anæsthesia is profound the uterine

contractions follow at regular intervals, and are long and feeble.

In one case of chloroform anæsthesia ten hours elapsed before the contractions again became normal!

THE USE OF ICHTHYOL IN FISSURES OF THE BREAST.

BEHREN (Revue de Thérapeutique, January 2, 1893) recommends the following formula:

Ichthyol, 4 grammes; Lanolin, Glycerin, of each, 5 grammes; Olive oil, 1 gramme.

Or,

Oil of sweet almonds, I gramme.

This ointment is applied to the affected parts. The intolerable pain of nursing is immediately diminished, and the infant continues to nurse with impunity, since the ointment is not irritating, and is easily removed by washing with simple water.

### THE ACCELERATION OF LABOR BY IN-TRAUTERINE INJECTIONS OF GLYCERIN.

PELZER (Revue Médico-Chirurgicale des Maladies des Femmes, January 25, 1893) recommends the injection of glycerin between the fœtal membranes and the walls of the uterus, observing the precaution that air does not enter with the glycerin. From fifty to a hundred cubic centimetres should be employed; the patient should be placed in the knee position. Four times in five cases the labor was premature.

Glycerin renders the neck of the uterus very dilatable, but aside from this has distinct oxytocic effects.

### RUPTURE OF THE BLADDER.

SCHLANGE (Archiv für Chirurgie, Band 43) states that rupture of the bladder seldom comes within the province of the surgeon for treatment. According to Bartels, the rupture can exist without any external wound. Of 504 cases of injuries of the bladder collected by him, only 169 were found to be ruptures.

From an anatomical stand-point two varieties of tears are found,—intra- and extra-peritoneal.

Of 322 cases reported by Rivington, 183 were intra-peritoneal and 119 extra-peritoneal. Of all these cases only 27 recovered, and of the latter only one was intra-peritoneal. The author has collected only 32 cases, 22 of which

were intra-peritoneal; 10 cases recovered and 12 died. Of the 10 cases of extra-peritoneal rupture, 7 recovered and 3 died.

In doubtful cases considerable knowledge may be gained as to the diagnosis by careful palpation and percussion of the bladder region. It is also indispensable that the patient be examined after recovering from shock, or, at the latest, within twenty-four hours of the time of injury. The patient should then be given an anæsthetic, his consent having been obtained for operation if the conditions found warrant the necessity of such a procedure. diagnosis be still uncertain, Riedel recommends that the bladder be opened through the perineum and its interior explored by the finger. Another class of surgeons recommend immediate laparotomy and examination of the bladder through this incision. The forcing in of air or salt solution may be of great aid in the diagnosis. A certain quantity of fluid may be forced into the bladder and then withdrawn. noting any difference between the quantity injected and that returned.

According to the author, injection of water into a ruptured bladder is a dangerous procedure, because of the possibility of stripping off peritoneum from the bladder or abdominal wall and forcing more liquid into the extra vesical tissues than otherwise would be found there. It is much safer to do a simple laparotomy with division of the left rectus.

The treatment of the abdominal cavity after the bladder contents have been extravasated into it has for its aim the removal of the urine and the neutralization of its effects by means of mild antiseptics. Weak lotions of sublimate or carbolic acid, and solutions of salicylic acid have been employed. Drainage is usually necessary, but in the author's case it was not used.

In the treatment of extra-peritoneal wounds it is not necessary to divide the left rectus muscle. As regards the bladder wound, different procedures have been suggested: the wound has been allowed to remain open, or it has been drained either through the abdominal opening or through the perineum; in the latter case the wound in the bladder is first sutured. A catheter should be passed into the bladder through the urethra and allowed to remain.

The abdominal wound should be packed with iodoform gauze, thus allowing bladder complications to be easily treated. The packing may be removed at the end of fourteen days and the abdominal wound allowed to granulate.

### ISCHIO-PUBIOTOMY.

PINARD (Revue Médico-Chirurgicale des Maladies des Femmes, January 25, 1893) reports a case of ischio-pubiotomy in a twenty-three-year-old woman. The patient had an oblique oval pelvis with anchylosis of the right sacro-iliac articulation. The first child was delivered by a basiotripsis. Her third child was delivered dead, and with great difficulty, the mother nearly losing her life. A fourth child was delivered prematurely, it being also dead. At the fifth pregnancy the girl wished particularly to be delivered of a living child.

The author thought it practicable to do a symphyseotomy, but owing to the anchylosis of the left sacro-iliac articulation sufficient separation could not be obtained.

As the condition of the mother was too grave to allow a Cæsarian section, it was decided to perform ischio-pubiotomy. The ischial and pubic rami were cut on the anchylosed side 5 centimetres from the median line. Tarnier's forceps were applied, and a child weighing 3970 grammes was delivered. At first there was a separation of 2 centimetres; this was later increased to 6.

The only trouble that was experienced during the operation was the difficulty in using the chain-saw to divide the horizontal ramus of the pubis. There was practically no hemorrhage. The bone was brought together with sutures and united by first intention.

#### SYMPHYSEOTOMY.

KRASSOWSKY (Centralblatt für Gynäkologie, No. 5) performed symphyseotomy upon a twenty-three-year-old 11-para with the following pelvic measurements: Diagonal conjugate, 9; conjugata vera, 7.5; circumference, 80; spines, 23; crest, 24; trochanter, 27; external conjugate, 15. The first child was delivered by craniotomy. After dividing the symphysis a separation of three centimetres took place, followed by copious hemorrhage from the depths of the wounds, which could not be controlled by tampons. Forceps were applied and a living child delivered after three attempts at extraction. After extraction of the child the ends of the symphysis remained separated, but by compression of the pelvis could be nearly brought together. On attempting to control the hemorrhage by digital pressure through the anterior vaginal wall, the finger tore through. The afterbirth was delivered in fifteen minutes. pubic bones were held within one centimetre of each other by means of five silk stitches; the vaginal tear was sutured. The entire operation lasted forty-five minutes. The child weighed 3410 grammes. The patient sat up on the third week and walked on the twentieth day.

SCHWARTZ (Centralblatt für Gynākologie, No. 5) performed symphyseotomy upon a twenty-two-year-old 11-para for the removal of a retained head. Her accoucheur failing to deliver by forceps, performed version by the feet, delivering to the head, which he failed to bring out, although forceps were applied repeatedly. Decapitation was performed upon the already dead child in order to obtain a better hold upon the head. The uterus, however, was thrown into a state of tetanic contraction, and through laceration of the os there was alarming hemorrhage, requiring tamponnade of the vagina.

Schwartz found the patient, eleven hours after, exhausted through loss of blood, and in eclampsia. The pelvis measured,—spines, 21 centimetres; crest, 23; the conjugata externa, 16.8.

Symphyseotomy was performed; the symphysis separated to 3 centimetres immediately, and after the application of the forceps to 7 centimetres, allowing the head to be extracted without difficulty. The placenta was expressed, the tears of the uterus united with six sutures, and an iodoform-gauze drain inserted. The symphysis was united by means of four sutures, the skin-wound was secured, and a linen binder was applied over the hips.

The child's head measured,—fronto-occipital, 5; mento-occipital, 12.8; bitemporal, 10; biparietal, 8. The patient suffered from slight fever for two weeks, and left her bed in the sixth week.

Schwartz performed a second symphyseotomy upon a twenty-year-old woman with child in transverse position, prolapse of the left arm, tetanus uteri, stinking secretion.

The amniotic liquor had been discharged for days, and several attempts had been made at delivery, without result.

Under chloroform narcosis, version by the feet was tried, but failed, owing to the rachitic, deformed pelvis. Pelvis measurements were as follows: Spines, 25.5; crests, 25; external conjugate, 15; conjugata dextra, 8.5; conjugata vera, 6. The promontory directed to the left, and very prominent. The child was yet living, but Cæsarian section as a conservative measure was decided against on account of the previous injury to the uterus. Symphyseotomy was, therefore, performed. An immediate separation to 3 centimetres took

place. On introduction of the hand the symphysis separated to 5 centimetres. During extraction the child died. It weighed three kilogrammes. The symphysis was united with silver wire. The patient died on the eighth day with evidences of peritonitis, which were confirmed by the post-mortem examination.

TORNGREN (Archives de Toxicologie et de Gynécologie, December, 1892) performed symphyseotomy twice. In the first case he gives the following pelvic measurements: Spines, 21; crests, 27; trochanters, 28; conjugata externa, 17; antero-posterior, 10. The previous four pregnancies were spontaneously terminated; the second lasted five days. In the fifth pregnancy version was performed, and a dead child, weighing 4000 grammes, was delivered. In the sixth pregnancy version was also performed. The head could only be extracted with the greatest difficulty; the child, however, was born alive, weighing 3800 grammes. The seventh pregnancy was terminated spontaneously, the child living, which weighed 3300 grammes. In the eighth pregnancy version was performed, but the child was with great difficulty extracted. It died soon after birth. In the ninth pregnancy the patient entered the hospital under the author's care. As the anteroposterior diameter was only 8 cerltimetres, symphyseotomy was decided upon. A median incision, 8 centimetres in length, was made at the clitoris, and the symphysis divided with a button-pointed bistoury. There was separation of 4 to 5 centimetres. The wound was covered with iodoform gauze, and the child extracted with the greatest ease by means of Tarnier's forceps. After delivery the bone- and fleshwounds were united with silk sutures, and the pelvis surrounded by an Esmarch band. infant was apparently dead, but was afterwards resuscitated. Its weight was 3400 grammes, and it measured 52 centimetres.

The diameters of the head were as follows: Biparietal, 9.5; bitemporal, 8; occipitofrontal, 11; occipito-mental, 13.

The patient died seven hours after the operation. At the autopsy no trace of sepsis could be found. The heart was degenerated, and the kidneys showed chronic nephritis.

The second case was thirty-six years old. The rachitic pelvis measured as follows: Spines, 23; crests, 27; trochanters, 30; conjugata externa, 16; antero-posterior, 9.5. Her first pregnancy was terminated by a basiotripsis. In the second pregnancy the application of the forceps failed to effect the passage of the child.

An incision was made over the symphysis,

the hemorrhage was arrested by forceps, and the symphysis was divided with a buttonpointed bistoury, aided by the index-finger in the vagina.

There was separation of 2 centimetres as the child began to descend; when this descent was assisted by the forceps, the separation increased to 6 centimetres, and the subpubic ligament was ruptured.

The soft parts were closed with superficial and deep sutures and the pelvis surrounded with an Esmarch band. After delivery a large tampon of iodoform gauze was introduced into the vagina to keep the tissues posterior to the symphysis in contact with the bone. The child weighed 3750 grammes.

The head measurements were as follows: Biparietal, 9.5; bitemporal, 8; occipito-frontal, 12; occipito-mental, 13; length of the body, 53 centimetres.

The progress of the case was entirely normal.

The author thinks it a better plan not to divide the subpubic ligament, but to be satisfied with section of the cartilage.

# OPERATION FOR CANCER OF THE BREAST.

LANE (Report of Clinical Society, Medical Week, vol. i., No. 5) described a case of cancer of the breast upon which he operated, removing, together with the diseased gland, the whole of the pectoral muscles. He then carefully dissected from the vessels and nerves of the axilla every bit of areolar tissue, together with the lymphatic vessels and glands. Lying between the pectorals, partly upon the chest-wall and partly upon the lesser pectoral, he found a thick cord of infiltrated lymphatics. This entered the axilla above the pectoralis minor. For some time previous to this operation he had been in the habit of dividing the anterior wall of the axilla, subsequently suturing the cut surfaces of the muscle together after carefully clearing the axilla of its lymphatic contents, and if necessary dividing the clavicle and treating the subclavian triangle in a similar manner, and then wiring the clavicle. Still, secondary growths formed in spite of this more extensive operation, but after a longer interval of time. When operating on such a recurrence he found, accidentally, a chain of infiltrated lymphatic vessels lying between the two pectorals in the position of those in the case described in this paper. Subsequently this condition was found in several cases, and the conclusion seemed fair that recurrences that developed after clearing the axilla were due to the presence of this lymphatic tract, infiltrated with cancer elements, and that there was reason to suppose that if this were removed the duration of the patient's life would be increased considerably, and that possibly the disease might be eradicated altogether. On removal of the pectoral muscles and fasciæ forming the anterior wall of the axilla, with the lymphatic vessels in relation with it, all the lymphatic channels along which infection has extended are taken away. If necessary the subclavian triangle can be dissected clear of diseased tissue. A single dressing is required at the end of twenty-four hours, for the removal of the drainage-tube, the use of which is necessitated by the free oozing of blood.

The objections to the operation are the large quantity of blood lost and the resulting limitation of movement of the arm and shoulder.

Note.—Although an operation as radical as this might be indicated on theoretical grounds, it still remains to be proved that recurrence is less frequent or is even materially delayed by such procedure.

### TREATMENT OF GONORRHŒA.

NEISSER (Second International Dermatological Congress, Archiv für Dermatologie und Syphilographie, 24 Jahr, 6 Heft), in discussing the principles of the treatment of gonorrhœa, states that the basis of all prophylactic and therapeutic measures must always depend upon a recognition of the gonococci, and that a judgment as to the gonorrhoal nature of every case must depend upon microscopical examina-The danger of gonorrheeal infection arises not so much from the acute inflammatory process it excites, but rather from its extension in men to the posterior urethra, seminal vesicles, epididymes, with involvement of the prostate and bladder, etc. In women, extension to the uterus, tubes, and ovaries, with involvement of the surrounding peritoneum. In the later stages of the disease the virus often gains entrance into the deeper layers of the epithelium; protected by its position from germicidal injections, it remains for months or years as a source of infection. In its earliest stages this virus is found superficially, and is readily destroyed by prompt therapeusis.

The main objects of the treatment should be to prevent the disease from extending into the posterior urethra, and to cure it before it becomes chronic. Therefore, treatment

should be instituted as soon as possible after infection. Only such medicaments should be used which destroy the gonococci and are least irritating to the mucous membranes. As filling these indications, the following are to be commended: Silver nitrate, I to 4000 to I to 2000; ammonium sulph-ichthyolate, I to 100; sublimate, I to 30,000 to I to 20,000.

Pure astringents are to be avoided, while irritating solutions and all mechanical treatment, at least in the early stages, are distinctly dangerous.

The best results are secured by using the medication selected in the form of frequent irrigations, so that all parts of the mucous membrane may be thoroughly washed. In men, the practical way of irrigating is by means of large syringes; in women, washings and injections may be supplemented by swabbing of the urethra and the cervix.

Internal medication is useless. General hygienic, dietetic, and local antiphlogistic treatment are warmly to be commended. In all cases, excepting those in the acute stages of the disease, the first thing to be discovered is whether the posterior urethra is involved, and whether the secretion from this part of the urethra contains gonococci. Only in the latter case should acute posterior urethritis receive treatment. The duration of treatment should never be brief. It is not rapidity, but rather safety, for which the surgeon aims. In chronic gonorrhœa a search for gonococcus must first be made. In case these micro-organisms are found, irrigations or Guyon's instillations give the best results.

When no gonococci are found, irrigations and instillations will still be found of use, but other treatment is usually necessary. Recourse to the endoscope will often be needed before cure is accomplished.

Treatment of gonorrhoea in women is much more difficult than is the case in men. Without most careful microscopic examination of the secretion, it is impossible to determine how much good is being done by treatment. The treatment of acute cases should be prompt and energetic, since thus involvement of the uterus, tubes, and ovaries may often be avoided. The rectal gonorrhoea deserves more attention than it has heretofore received, since this forms the starting-point of many chronic rectal ulcers.

Lang agreed with Neisser that rectal gonorrhoea is much more common than is generally believed, and stated that it often leads to rectal stricture. He treated both the latent and chronic cases by soluble bougies.

Wielander warmly commended his abortive treatment of gonorrhœa. This method consists in the mild scraping of the superficial epithelial layers of the anterior portion of the urethra, and especially of the fossa navicularis, by means of a pledget of cotton wound on an applicator. After this rubbing, 15 drops of a two- to three-per-cent. nitrate-of-silver solution are injected and retained in the urethra for some minutes. This injection may be repeated the following day, if necessary. In none of the many cases thus treated were there any complications. The only unpleasant feature was the ardor urinæ from which patients suffered for one or two days. When this treatment was employed before the gonococci had penetrated between the epithelial layer, gonorrhœa was aborted.

Finger called attention to the fact that cases varied greatly in intensity and in the rapidity of their extension. He stated that an experimental research on dogs proved that a ten-percent. solution of nitrate of silver penetrated deeply an inflammatory infiltrate. A five-percent. solution acted more superficially, while a one-half- to one-per-cent. solution acted purely on the surface, destroying only such gonococci as were entirely superficial.

Van Hoorn stated that by injections of sublimate in the beginning (1 to 20,000) he was able to abort an acute gonorrhœa.

Lewin held that after a 1 to 4000 solution of nitrate of silver was used, this penetrated by means of imbibition into the deeper portions of the inflammatory infiltrate.

Neisser believed that the use of the endoscope and the passage of instruments in acute cases were attended with absolutely no danger; that the application of strong solutions of silver nitrate, although sometimes attended with brilliant results, is, as a rule, very unreliable, and is at times dangerous. Irrigations he commended, but believed that they were not practicable.

Medication by the stomach he held was useless so far as its germicidal effect was concerned, although doubtless by this means it is possible to diminish suppuration and lessen inflammatory action. He believed that the examination of prostitutes without subjecting their discharges to a microscopic test was ridiculous in the extreme.

#### MYXŒDEMA.

MacKenzie (Lancet, No. 3, vol. i., 1893) summarizes the symptomatology, pathology, and treatment of myxœdema, and contributes

a case successfully treated by a new method. He calls attention to the fact that several members of the same family may be attacked. Atrophy of the thyroid gland is marked in all. When the malady is fully developed there is considerable increase in the bulk and weight of The physiognomy is markedly althe body. tered, the features assuming a placid, mask-like form of expression; the eyebrows are elevated. the eyelids puffy, and the nostrils broadened; the lower lip is thickened, everted, and livid, while the cheeks show a red patch, contrasting strongly with the eyelids. The skin is dry, scaly, and downless; the hair is dry and frequently scanty; the subcutaneous tissue is swollen, especially in the hands, feet, and legs, but it does not pit on pressure; there is usually fulness in the supraclavicular regions; the gums are swollen and spongy; the teeth carious; the tongue, uvula, and soft palate are swollen. The temperature is usually subnormal, and the patient feels cold. There is impairment of memory, irritability alternating with placidity, slow, monotonous, and deliberate speech, and a slowness in comprehension which is clearly appreciated by the patient. Sensation is sometimes markedly retarded, and hearing, smell, and taste are blunted. There is frequently a certain amount of inco-ordination, the legs giving way unexpectedly. The pulse is usually weak, soft, and slow. The mucous membranes have a tendency to bleed; the urine is of low specific gravity, and at a late stage usually contains albumin. All the symptoms are aggravated by cold weather.

The disease has a tendency to progress slowly. Some patients are carried off by phthisis or other intercurrent diseases, the remainder dying of myxœdema. The autopsy shows increase in fat, passive effusion into the serous cavities, and atrophy of the thyroid gland. At the time of death mucin may not be in excess, but there is little doubt it is an essential feature at a certain stage of the disease. This excess of mucin has been found in internal organs as well as in the subcutaneous tissue.

The first step in the way of remedying this condition was made in the experiments of Schiff, who showed that the evil effects of thyroidectomy in animals could be diminished by transplanting a thyroid gland previous to the operation. Horsley suggested a similar procedure as a possible means of arresting myxcedema. The first trial of this method was attended with striking, but only very limited, improvement. The difficulty was to effect the survival of the transplanted gland in its new position, and what actually happened was its

absorption into the surrounding tissues. Next were tried hypodermic injections of the glycerin extract prepared from these glands. Murray and other physicians obtained very beneficial results from this.

The objections to this method were the pain attendant upon it and the danger of subcutaneous abscesses. It was also found that lividity, loss of consciousness, temporary loss of power in the extremities, or general muscular spasm, sometimes supervened during or immediately after the administration of an injection.

The author discovered that the administration by the mouth of the thyroid gland, or of a preparation derived from it, served the same purpose as a preparation of thyroid extract. The patient he treated by this method had been suffering from the fully-established disease for several years. She was a typical example of myxædema. She was ordered two sheep's thyroid glands to be obtained fresh from the butcher and to be given finely minced every day. The effect of this administration on temperature and on the sensation was almost immediate. temperature became normal, or even a little above normal, while a comfortable sensation of warmth permeated the patient's body. The administration was not quite regular on account of difficulty in procuring the glands. During the first fortnight the patient received eight thyroid glands and two drachms of thyroid extract by the mouth. By the end of that time her appearance had very considerably altered for the better, but her pulse-rate had risen from 56 to 116; the rapidity of her pulse continuing, the administration of the thyroids was discontinued for a time, when the rate gradually fell to 80. The patient suffered from vomiting at times. This and undue rapidity of the pulse can usually be taken as an indication for the temporary cessation of the treatment.

Six weeks after the treatment was started the hands and feet desquamated as completely as after scarlet fever, and delicate, soft skin replaced the former coarse cuticle; there was a rapid loss of bulk and weight, so that in two months there was a difference of about twenty-eight pounds. The mental condition and speech improved in the same ratio. The hair came in rapidly.

The finely-minced gland was at first administered with a small quantity of brandy and beef-tea. Later it was allowed to stand for about half an hour with a few teaspoonfuls of water. This was then strained, the juice being squeezed through a piece of linen or muslin. The expressed fluid was added to some beef-

tea. An extract thus made, administered once a week, was sufficient to keep the patient in good health after she was cured.

Later experiences convinced the author that much less of the remedy is required than was employed at first in this case. The gland, or half a drachm of the extract therefrom, twice a week is as much as it seems advisable to commence with, and at a later period the same amount once a week appears to be sufficient.

MacKenzie tried this treatment on two cases of Graves's disease, or exophthalmic goitre, but without any effect on the symptoms.

# THE TREATMENT OF AMENORRHŒA IN YOUNG GIRLS.

CARRIÈRE (Revue Médico-Chirurgicale des Maladies des Femmes, January 25, 1893) states that far better results are obtained by the combination of iron with ergot than are to be expected from iron alone.

Trousseau employed honey of iron with most excellent results. In some cases it is more advantageous to combine the iron, especially the tartrate of iron and potassium, with emmenagogues.

In cases where the amenorrhoza is caused by chlorosis, general hygienic treatment, with perhaps a change of climate, will often bring about the desired result. Or, if these fail, inhalations of oxygen, and massage may be tried.

Of the emmenagogues only three are of any special value in these cases,—namely, mugwort, saffron, and apiol.

Mugwort may be used in the form of an infusion, the strength being five grammes to a litre of water, three cupfuls to be taken during the day. Saffron can also be administered as an infusion, a few of the pistils to be added to a cup of boiling tea. Apiol should be given in gelatin capsules in doses of 25 centigrammes twice daily.

The question as to the time of administering emmenagogues is a simple one. Medication should be begun at least two days before the expected time and should be continued for five or six days afterwards.

This same plan of treatment should be repeated the following month. If at the third month the sickness should be at the regular time, medication should be discontinued.

Static electricity is at times a stimulant and at other times a sedative to the nervous system.

It often acts as a powerful emmenagogue. Arthius and Larat claim that the electricity should be applied to the pelvis, limbs, and lower part of the abdomen. Ten or twelve applications are generally sufficient.

For irregular menstruation the preventive treatment of chlorosis and care to avoid fatigue are generally sufficient to regulate the flow, without the administration of the emmenagogues.

Cases of sudden arrest of the sickness from cold or emotional causes are best treated by warm foot-baths, sinapisms to the thighs, and the internal administration of bromide of potassium, valerian, hot punch, etc.

### IMPLANTATION OF THE URETER INTO THE RECTUM.

Morestin (Revue de Thérapeutique Médico-Chirurgicale, 60 an, No. 3) has experimented upon dogs, with the idea of determining whether it is possible to successfully implant the ureter into the rectum.

In ten animals both ureters were secured in the rectum. Six of these died of peritonitis or renal infection. Ih fourteen animals the ureter of one side was secured in the rectum. In four cases no previous dilatation of the ureter was practised. All died of peritonitis or infection. In four cases the ureter was previously dilated; one died. In six cases dilatation and lateral incision were both practised; death followed from hydro-nephrosis or infection. Some of the dogs in which simple dilatation was practised lived for awhile, but finally the ureter was constricted by the rectal walls. The author concludes that an operation of this kind promises very little; that although it is easier in men than in dogs, because of the larger ureter in the former case and the possibility of much more rigid antisepsis, nevertheless a bilateral operation of this nature should be rejected.

Tuffier, in commenting upon these experiments, states that the results were necessarily bad, since the condition attained by operation in no way simulated that found in nature. When the ureter is opened into the rectum, the conditions are quite different from those obtaining at the vesical orifice of this tube. Septic nephritis is always to be feared in these

Chaput observed that he had twice performed this operation in man, with successful results.

### Reviews.

DISEASES OF THE LUNGS, HEART, AND KIDNEYS. By N. S. Davis, Jr., M.D.

Philadelphia and London: The F. A. Davis Publishing Company, 1892.

We are told in the preface of this number of the "Ready Reference" series that the volume comprises a number of the lectures delivered at the Chicago Medical College. Doubtless for this reason the articles are not as thorough as they would be had Dr. Davis given himself the task of writing an exhaustive treatise upon the diseases affecting the lungs, heart, and kidneys of man. Those who are fond of having prescriptions prepared for them will find quite a number printed in this work, but the compression of so many important classes of ailments into the short space of three hundred and fiftythree small pages renders the task scarcely thorough enough for the information of the careful practitioner.

A MANUAL OF PRACTICAL, MEDICAL, AND PHYSIOLOGI-CAL CHEMISTRY. By Charles L. Pellew, E.M. Illustrated.

New York: D. Appleton & Co., 1892.

To those who are fond of carrying on private laboratory work in association with the practice of medicine, or who wish to make careful examinations of the secretions of patients, this book will prove invaluable. It is not a work which has been gotten together for the use of the ordinary practitioner, and will probably find its largest usefulness in the hands of the undergraduate student, who is gaining in the laboratory the chemical information which is necessary as a groundwork for the practising physician.

The illustrations are clear and useful. An appendix is given, which contains tables of weights and measures, atomic weights, a list of reagent bottles and chemicals which are necessary, and a list of the apparatus required for the various lessons which are arranged in the book, and which extend from No. 1 to No. 30.

THE INTERNATIONAL CLINICS. Vols. I., II., and III. Second series.

Philadelphia: J. B. Lippincott Company, 1892.

That the "International Clinics," published by the J. B. Lippincott Company, have proved themselves valuable to the practitioner of medicine is proved by the success which they have apparently obtained, although those who are best acquainted with the profession and the works which it is apt to buy, considered the venture a doubtful one when it was first undertaken.

The three volumes which are here before us afford us an opportunity of discovering upon what this success is based. They consist in brief lectures, which tersely summarize the most recent and rational views concerning disease and its treatment. They therefore afford to the busy doctor an opportunity which he could otherwise only get by attendance upon the clinics of some large medical school, whose faculty consisted of men of eminence.

The most noticeable articles in these three volumes are "Empyema and its Treatment by Valvular Drainage;" "The Examination and Treatment of Eye-Diseases in Children;" "A Memoir of Professor Agnew;" a paper by Dercum upon "Cerebellar Titubation, Sunstroke Sequelæ, Syringomyelia, Traumatic Hysteria;" "Trephining for Focal Epilepsy and for Brain-Tumor;" and one by Goodell upon the "Radical Cure of Cancer of the Womb by Hysterectomy."

These titles give but a faint idea of the diversity of the information contained in these clinics. It is to be hoped that the profession will appreciate them sufficiently to justify the publishers in the continuation of the series.

. Alcoholism and its Treatment. By J. E. Usher, M.D.

New York: G. P. Putnam's Sons. London: Baillière, Tindall & Cox, 1892.

The book before us is a small volume of upward of one hundred and fifty pages, and deals briefly and in a popular manner with the various forms of inherited and acquired alcoholism, the relations of alcoholism to insanity and crime, and, finally, the treatment of alcoholism. The medical portions of the book are written evidently with a view to impress the lay reader rather than to be of value to the medical man, as witness the brief chapters on the pathological changes in alcoholism, in which the subject is dealt with in a most superficial manner. The chapters of real value in the book are the ones on alcoholism and its legal relations. Here much valuable information is compressed into a small space, and English and American law in relation to both civil and criminal cases is treated in a very satisfactory manner. The chapters on treatment are, on the whole, rather disappointing, the subject being dealt with in too general a way. It is very probable, however, that the anthor has written his book mainly to emphasize the idea that alcoholism is a disease and is amenable to treatment. In this his object has certainly been accomplished. F. X. D.

HAND-BOOK OF MASSAGE. By Emile Kleen, M.D., Ph.D. Authorized translation from the Swedish, by Edward Mussey Hartwell, M.D., Ph.D.

Philadelphia: P. Blakiston, Son & Co., 1892.

There have been a number of books upon this subject published within the last few years, some good, some bad. Most of them bad. This is one of the good ones, if not the best.

It contains practically all that is necessary for the physician or nurse to know concerning this important therapeutic measure, and discusses with more reason than do most books devoted to specialities of this kind the advantages which are to be gained by it in various diseased states. If there is a demand for a book on massage, no doubt this work will meet that demand.

As a piece of book-making, it is marred by a large number of foot-notes, which detract greatly from its appearance.

THE PHYSICIAN'S COMPLETE BOOK OF REFERENCE, CONTAINING A CALL-LIST AND RECORD OF VISITS, CASH ACCOUNTS, LEDGER, OBSTETRICAL RECORD, DEATH RECORD, AND GENERAL MEMORANDA. Edited and compiled by S. E. Walker, M.D.

Philadelphia: The Keystone Publishing Company, 1892.

This combination-book devotes its first eighty or one hundred pages to an alphabetical index, and after this consists in a careful arrangement designed to enable the busy physician to keep his accounts without difficulty. We presume that this is about as perfect a compilation as could be made, but we doubt whether many physicians are careful enough to keep all the records which this book requires. Nevertheless, it will tend to make the physician keep his accounts correctly, and after he has once grasped the details of its arrangement, he will find no difficulty in making all the entries which are necessary for the records of his daily work.

LECTURES ON MENTAL DISEASES, DESIGNED ESPECIALLY FOR MEDICAL STUDENTS AND GENERAL PRACTITIONERS. By Henry Putnam Stearns, A.M., M.D.

Philadelphia: P. Blakiston, Son & Co., 1893.

The utmost latitude should be conceded to an author of a text-book on insanity, both in the arrangement and in the handling of his subject, for in no other field is there so much debatable ground.

Following the general plan of other writers, the author very properly divides his book into two portions,—one general and one special. In the first are considered, very briefly, "the physical basis of thought,"—i.e., the structure of the brain, and the "elements" of insanity; namely, hallucinations, illusions, imperative concepts, insistent ideas, and delusions. The use of the word "elements" seems to us rather unfortunate. It seems to imply that insanity is a something made up of component parts, as, for example, a chemical compound.

It is, however, with the second portion of the book that we are the most concerned. We turn almost instinctively to the pages upon classification, as affording an insight into the author's views of insanity,—as displaying more or less the author's grasp of his subject. must candidly confess we are disappointed. The author devotes several pages to prove a proposition which every alienist must admit,namely, that all classifications are to be regarded as merely tentative; but even this must be accepted as true only in a limited sense. A certain natural classification, such as Krafft-Ebing has followed, suggests itself. All insanities fall into two great groups,—a, those without, and b, those with definite anatomical changes. Further, Krafft-Ebing has shown, as regards the first group, that certain of the psychoses occur in persons with an inherited or an acquired predisposition, and that others occur in persons in whom no predisposition whatever existed. In other words, among the insanities unassociated with anatomical changes, some appear in individuals in whom there is an hereditary or acquired neuropathic taint, and others in individuals free from such taint. Certainly, no writer upon insanity can afford to slight such fundamental generalizations.

As a basis for his lectures the author presents the following arrangement. All forms of insanity are divided into two,—a, "Symptomatological," and b, "Ætiological." The latter are subdivided into "epochal," "sympathetic," "toxic," "neuropathic," "pathological," and "other less frequent genera and species." The author does not invite comment upon this "arrangement," and we believe it to be unnecessary.

The various forms of insanity are considered in the following order: Melancholia, mania, primary delusional insanity, folie circulaire, dementia, adolescent insanity, senile insanity, climacteric insanity, insanity of pregnancy, insanity of masturbation, epileptic insanity, alcoholic insanity, general paresis, acute delirium, and post-febrile insanity.

The descriptions are, as a rule, clear and full, and cases are cited here and there in illustration. In addition, the more salient points are

accentuated on almost every page of the book by heavy-faced type. The great advantage of this method in a text-book is obvious. Finally, there is a valuable appendix of "Extracts from the Laws of the Different States and Territories of the United States which relate to the General Care of the Insane." F. X. D.

HAND-BOOK OF INSANITY FOR PRACTITIONERS AND STUDENTS. By Theodore Kirchhoff, M.D.

New York: William Wood & Co., 1893.

The book before us is divided into a general and a special part. The first deals with the anatomical basis, and the location, the causes, the signs, the course, the diagnosis, and the treatment of mental disorders, and concludes with an interesting chapter on the history of psychiatry.

The author divides insanities into, first, simple mental disorders; and, secondly, mental disorders associated with permanent anatomical changes in the brain or with general The description of the various forms of insanity is excellent, and leaves little to be desired. Everywhere we are impressed with the thorough and scientific manner in which the author deals with his subject. The language is simple, clear, direct, and unincumbered by metaphysical expressions. In addition to this excellent text there are no less than eleven plates, each containing four or five figures, illustrating the various typical forms of insanity. They are evidently reproductions of photographs, and are in themselves admirable.

Although nothing is said on the title-page that would lead us to infer a German origin of the book, other than the name and position of the author at the University of Kiel, this origin is revealed in the text by the retention of the names "wahnsinn" and "verruecktheit," as designating subdivisions of parancea. As a foot-note very correctly explains, these terms have no exact equivalent in English. sinn is defined as a mental disorder in which delusions and hallucinations are rapidly combined into a composite whole, intimately associated with strong effects; while verruecktheit is defined as a mental disorder in which delusions. usually associated with hallucinations, are carefully and slowly combined into a progressive delusional system, and in which the effects are only accidental elements of the clinical history and rapidly disappear. As a third form of parancea, the author places "confusion," which is merely a terminal state of verruecktheit. As is readily seen, this classification of parancea is less complicated than that of Krafft-Ebing, and perhaps better suited to the wants of the student.

The tendency of the book throughout is towards simplicity, conciseness, and precision. As a whole it is an excellent presentation of modern scientific psychiatry. The publishers had a happy thought when they decided to place it before us in the English language, and the profession is to be congratulated.

F. X. D.

A HAND-BOOK OF DISEASES OF THE EYE AND THEIR TREATMENT. By Henry R. Swanzy, A.M., M.B., F.R.C.S.I. Fourth edition. With illustrations. Philadelphia: P. Blakiston, Son & Co., 1892.

Two years have sufficed to exhaust the third edition of this excellent text-book, and now the fourth is presented for the consideration of students of ophthalmology, A work which has met with such success does not require an extended review. Probably no other text-book of like proportions has succeeded so well in fulfilling the promise of its author to give a succinct and practical account of the subject in its most modern aspect. It is unnecessary to do more than welcome the new edition and heartily recommend it, as we have done for the volumes which precede it, to students and practitioners of ophthalmic surgery.

## Correspondence.

#### LONDON.

(From our Special Correspondent.)

The Hospitals of London.—The Electrical Department at St. Bartholomew's.—It has become a generally recognized rule that the practitioner who wishes to pose as an authority in his profession will almost of necessity find it greatly to his advantage to travel. Otherwise, though he may be to some extent informed through the medical journals of the progress which takes place in other countries, he will still be at a disadvantage as compared with the man who, having seen with his own eyes the manners and customs of other countries, returns to compete with him in the struggle for existence.

Though it is still, as formerly, the recognized thing to go the round of the German schools, it is, if I may judge from the number of Americans who now visit the London hospitals, at least as profitable to spend some part of the time allotted for travel in tapping the great

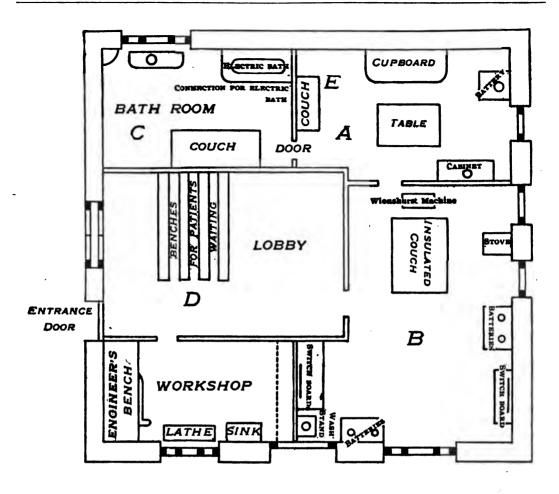
storehouse of clinical material contained in our great metropolis. The post-graduate courses, which are becoming more and more appreciated by our foreign visitors, have done a great deal to establish our reputation as clinical teachers of the world's students; but still greater things are possible, and I feel that it will not be without interest to the readers of this journal if I give them, in a series of short papers, some of the special features presented by our London hospitals.

I do not propose to take these in any definite order, but I feel that I am bound to commence with my own school,—St. Bartholomew's Hospital,—one of the largest, and certainly the best endowed, of our metropolitan schools.

A few years ago hospital practice was very different to what it is at the present day. There was a broad division of the cases into medical, surgical, and gynæcological, but the refinements of subdivision at present in vogue were practically unknown. This month I shall deal with the most recently introduced, but by no means the least advancing of our special departments,—that devoted to electrical treatment.

The Buildings.—Entering the hospital by the large gate leading from West Smithfield, one sees to one's left a series of small and unpretentious buildings. It is these which I am now about to describe, and I have had my task made comparatively easy by the kindness of Dr. Lewis Jones, the physician in charge of the department, who has been good enough to furnish me with much of the information which follows, and has also revised the article. The department first came into existence at the end of 1882, and was placed under the direction of the late Dr. Steavenson, who may be said to have been almost the pioneer of systematic medical electricity in this country, although an electrical department had been in existence for some time previously at Guy's Hospital. When I say that the number of cases treated by electricity during the first year of the existence of the special department, including those cases in which the current was used only to test muscular reactions, only amounted to fifty-five, while in the past year the number has risen to more than three hundred and fifty (most of them being cases of paralysis in which the current was used for curative purposes), it will easily be seen how the work has increased in impor-

The Rooms.—The arrangement of the rooms will be best seen from the accompanying plan. The department consists now, as formerly, of a general room, in which are two assistant elec-



- A DR JONES' ROOM
  - ROOM
- B. GENERAL ROOM
- C. BATH ROOM
- D. WAITING ROOM





tricians and a number of clinical clerks selected from among the senior students of the hospital; a room occupied by Dr. Jones himself; a bath-room; a waiting-room for the patients; and a workshop in charge of an attendant, who is able to effect all small repairs and renewals without need for calling in the instrument-maker, and whose duty it is to see that all apparatus is in thorough working order.

The Apparatus.—The equipment of the department includes three large batteries, formed of sixty Leclanche cells each. These are kept in a cellar underneath the rooms, and the current is led from them to three switch-boards, each completely fitted with commutator, galvanometer, rheostat, and induction coil. In the older forms of switch there used to be the great economic difficulty that the collector-arm. in passing from stud to stud, short-circuited each cell in turn when resting on two studs at once, thereby causing a great waste of battery-power. In the improved form with which the switchboards are now fitted this is obviated in the following manner: The pointer is split longitudinally, and its two halves are joined through a resistance of fifty ohms, which prevents serious short-circuiting. Besides these large batteries, there are four portable batteries and two separate faradic machines in regular use, so that a considerable number of patients can be treated at once. The rooms are also well supplied with galvanometers, as a necessary addition to each galvanic battery, for there is nothing more important in the application of electricity than to know the exact amount of current which is being

I have spoken of the Leclanche battery as the one in favor here, and this may be a matter of surprise to some, when so much is now said about the advantages of dry cells. Of course most of the varieties of dry cells have been tried in the department, but it has been found that the heavy work required of a hospital battery soon exhausts the small capacity of most of them, so that, useful as these cells may be for private practice, they are at present unsatisfactory for hospital work.

Cauteries and small incandescent lamps used formerly to be worked by bichromate cells, but it is found far more economical and satisfactory to use accumulators for this purpose. A four-cell accumulator, weighing about thirty pounds, is sufficient for all the incandescent lamps used, and is much more economical than the small sizes of accumulators now on the market.

For statical electricity there is an eight-plate Wimshurst machine inclosed in a glass case and placed in the general room. It works extremely well in all weathers, and is without doubt far more efficacious for hysterical cases than any form of faradic treatment. The statical treatment employed may be described as almost entirely a treatment by sparks, the patient sitting or lying on an insulated couch and holding one conductor, while the other is presented to the part under treatment. Wires very thickly coated with gutta-percha are used as leads, knobs of different sizes being adapted to the ends of the wires as required.

The Cases.—I will now give some particulars of the cases treated. As I said before, the number of new cases which attended last year was about three hundred and fifty, most of these being cases of paralysis, and the commonest type being infantile paralysis.

Infantile Paralysis.—The treatment of this form of paralysis is, according to the experience of the department, far more hopeful than is generally imagined, and if it be recollected that children suffering from this disease are often not brought until two or three years after its commencement, the results are highly satisfactory as compared with those obtained by drug treatment. One thing is essential; this is, that the children be brought regularly, at least twice a week, and that care be taken in carrying out all the instructions given. There are often as many as twenty under treatment at the same time, and the number seen in the course of the year has been over fifty. Nearly all have shown a marked improvement. One case deserves special mention. This is that of a child who, when it first attended, had paralysis of one leg. This yielded to treatment, but at the end of the course the other leg became affected. It is satisfactory to record that treatment was then applied to the other leg with equal success. The treatment employed is by the constant current, the negative pole being applied to the affected limb and the positive pole to the spine. A current strength of about five milliampères only is required; but, as different children show a marked difference in their tolerance of the current, the rule is to apply a strength just short of what is painful to them. The mothers are also directed to regularly bathe and rub the affected limb every night at home.

Deltoid Paralysis.—Cases in which the deltoid is the muscle affected are also fairly frequently seen, but these do not improve nearly so markedly as those in which the leg is the limb affected.

The results with facial paralysis are most satisfactory. The same applies to paralysis from pressure or injury of nerve-trunks, especially

that form usually known as "crutch palsy." Improvements have also been noticed in some cases of hemiplegia. In these cases it cannot quite be expected that a complete recovery will often ensue, as the electric current does not pretend to do away with the effects of gross nerve-lesions; but it appears that there is often an amount of paralysis far greater than that which can be accounted for by the actual nervelesions, and in these a short course of faradism often succeeds in restoring a certain amount of power to the affected limbs, much more than could have been expected. It is certainly, according to the experience of the department, quite worth while to give any case of hemiplegia the benefit of a month's treatment.

Neuralgia, etc.—In the treatment of neuralgia the results have been very favorable. Although no very obstinate cases have recently been seen, a great number of cases of sciatica and lumbago are sent from the wards for treatment. In these cases some have been treated by application of the positive pole of a constant battery to the sciatic region, using a large electrode and large currents. Others have had the electric-bath,—either the faradic or the galvanic. It often happens that one of these forms of treatment may succeed after the other has failed, so that no case should be given up until both the faradic- and the galvanic-bath have been tried.

Electric-Bath.—The electric-bath is largely used for a variety of conditions. Hardly a day passes without its application to some patient. Dr. Jones tells me that more than four hundred baths were given last year, the great majority of cases being those suffering from chronic rheumatism. The faradic-bath has also been used with varying success in cases of chronic myelitis and spinal sclerosis. I should not omit to mention that the faradic-bath has also been used for some cases of exophthalmic goitre, and that these cases have shown considerable improvement, far greater than has been obtained in others by the usual method of applying galvanism to the neck.

Enuresis Nocturna.—Enuresis nocturna is another condition which frequently comes up for treatment, and which seems remarkably suitable for treatment by electricity. The treatment at present adopted in these cases is to apply faradism for five minutes to the perineum, to follow this up by galvanism for a like time with the positive pole, the other electrode being placed on the lower dorsal spine. This treatment is usually successful if persevered in for about two months, and many patients begin to improve from the commencement. Care

must, however, be taken that treatment is not discontinued too soon, for relapses are frequent under these circumstances. A special electrode, devised by Dr. Jones, is generally used in the department. It consists of a conical-shaped plug or base, which is so shaped as to be of easy application to the perineum. A piece of wash-leather is stretched over this, and held in place by means of a firm ring of vulcanite. The advantage of this form is that a fresh piece of wash-leather can almost instantly be adjusted for the use of each patient.

Tinnitus Aurium.—Many patients sent over from the ear department are also to be seen here suffering from tinnitus aurium. About one-half of these are relieved by the treatment, which consists in the simultaneous application of the positive pole to both ears at once by means of a forked electrode resembling a binaural stethoscope. The ends are not inserted into the meatus, but are placed just in front of the tragus. The patients are thus enabled to hear and notice any change in the character. . or intensity of the sounds, which they cannot do so well when the electrodes are in the ear itself. The strength of current used varies between five and ten milliampères, and is switched on and off very gradually by the aid of a rheostat, for it is found that any sudden alteration of current is apt to make the tinnitus worse instead of better.

Surgical Applications.—The chief surgical applications of electricity, as used at St. Bartholomew's, are its use for the electrolysis of nævi and moles and for the destruction of redundant hairs. Trichiasis is far better treated by removal of the eyelashes in this than in any other manner. The introduction of the galvanic needle into the hair-sac effectually prevents the recurrence of the trouble, whereas epilation generally requires to be done frequently.

Several cases of nævi can generally be seen under treatment in the department. Both poles of the battery are used, and are connected with fine needles, which are inserted into the nævus. Either separate needles are used, or, in the case of a large nævus, a special bipolar fork electrode, made up of a series of needles so connected with the battery as to be alternately positive and negative. This is also an arrangement introduced by Dr. Lewis Jones.

As regards the other uses of electricity in the hospital, the officers are frequently called upon by the surgeons to apply the galvano-cautery, and also to manage the cystoscopes which are constantly being requisitioned. The very large

cautery of Professor Bottini, recently figured and described by Mr. Bruce Clark in the British Medical Journal, is also used occasionally for the treatment of enlarged prostate. The success of this treatment in the few cases to which it has been applied is, however, most encouraging, and leads to the hope that it will receive a more extensive trial. The current required to heat Bottini's cautery is very large,—viz., fifty ampères,—and this is a severe tax on the accumulators.

Lead Palsy.—In speaking of paralyses, I find I have omitted mention of another variety of cases which frequently applies for treatment,namely, lead palsy. These are somewhat peculiar, in that the muscles nearly always show markedly the reaction of degeneration some time before the patient complains of paralysis. That they do improve considerably under galvanic treatment there is no question; but it, unfortunately, generally happens that, as soon as the symptoms get less urgent, the patients return to their old work, and commence once more to absorb the poison, so that in most cases the poisoning and the remedy are going on simultaneously. This leads to all sorts of peculiar reactions, and it is necessary to know the habits of this class of patients in order to understand them.

In conclusion, I may say that I have seen the electrical departments of other hospitals, and can candidly say that there is no other which will so well repay a visit as that of St. Bartholomew's. The work carried out there is doing much, and will assuredly do more, to release this form of treatment from the stigmatism of quackery, under which it has labored so long in this country. If medical men refrain from acquainting themselves with the legitimate applications of electricity, they are deliberately playing into the hands of the quacks and impostors who profess to cure all ailments, real and imaginary, by its aid. If they make it their business to become skilled in the application of this, as of any other therapeutic measures, there will no longer be room for those ignorant and unqualified professors of the healing art who have done so much to throw discredit on the whole question.

### THE ACTION OF SULPHONAL.

To the Editors of the THERAPEUTIC GAZETTE:

DEAR SIRS:—I must take exception to your note on page 116 in the February GAZETTE. An experience of three years with the administration of sulphonal to many more than five

hundred patients suffering from the various forms of insomnia, as seen in an indigent insane hospital, warrants me in making a most positive statement that for rapid action and quick results sulphonal (20 grains), administered in hot milk or water,—in other words, dissolved,—is most efficient, and will, in the great majority of instances, produce quiet, refreshing sleep in less than thirty minutes after its administration.

If your statement that "sulphonal generally takes five or six hours to act" were correct, it would be a useless hypnotic. I have made much use of hypnotics, and have come to depend upon four of the group as meeting the indications in the majority of instances, save in the insomnia of alcoholism,—viz., for rapid action in pure insomnia or the insomnia of active mania in the strong and vigorous, with good hearts and kidneys, sulphonal (20 grains) dissolved in hot menstrua, such as hot milk, hot water, or hot beef broth, or somnal (½ to I fluidrachm), diluted.

In the less vigorous, with cardiac, chest, kidney, or gastric complications, chloralamid (20 to 30 grains) dissolved, or hyoscine hydrobromate (18 grain).

In the aged, in the insomnia of organic brain-disease, in the very feeble from whatever condition, hyoscine hydrobromate ( $\frac{1}{160}$  grain).

In the above I am indicating the drugs that have positive value for *insomnia*, and not for mania, hysteria, etc.

For the insomnia of acute alcoholism I have found no one drug treatment comparable with a hypodermic injection of morphine (½ grain), followed by chloral (20 to 30 grains), with tinctura capsici (20 minims) or paraldehyde (1 drachm, repeated).

I find that one of the sources of failure of hypnotics is neglect of the condition of the heart. In all cases of cardiac weakness and slowness, the use of caffeinæ citrat. during the day, and in weakness with rapidity, digitalis during the day, will give good results from hypnotics where failures otherwise occur.

D. E. Hughes.

### PHILADELPHIA HOSPITAL.

[Sulphonal, like all other drugs, acts only when it is absorbed. If given in powder, or in pill or compressed tablet, it takes several hours to act, because this time is consumed in its solution and absorption. If thoroughly dissolved in hot water, it probably acts in ten or fifteen minutes, because the heat and state of solution cause rapid absorption.—ED.]

# Therapeutic Gazette.

Whole Series, Vol. XVII.

DETROIT, MICH., PA., April 15, 1893.

Third Series, Vol. IX. No. 4.

### CONTENTS.

### Original Communications.

PAC	;1
Treatment of Chronic Valvular Disease	
of the Heart. By James Tyson, M.D. 2:	ľ
Enuresis in Children, By J. Madison	
Taylor, M.D 2:	2
The Treatment of Eczema of the Lower	
Extremities. By Milton B. Hartzell,	
M.D 2:	2
Acne, Acne Rosacea, Seborrhœa, and	
Sycosis. By Henry W. Stelwagon,	
M.D s:	d
Electricity in Gynsecology. By John M.	
Fisher, M.D 20	d
How to operate for Hemorrhoids. By	
Charles B. Kelsey, M.D 23	34

### Leading Articles.

The Influence of some of the New Anal- gesics in increasing the Susceptibility	
to Cold	240
The Treatment of Cardiac Disease	240
The Treatment of Tetanus by means of	
Immunized Blood-Serum	24I
Voltaic Alternatives in Optic - Nerve	
Atrophy	244

### Reports on Therapeutic Progress.

tinuous Current	230
The Medico-Electric Eye-Bath in the Treatment of Scleritis and Episcleritis a Kataphoresis	239

	Thymol as an Anthelmintic	248
	The Influence of Ergot on the Involu-	٠
	tion of the Uterus during the Lying-in	
		250
į	Period	-50
	Fib.	
Ì	The Treatment of Myxœdema by the	•5•
	Ingestion of Fresh Thyroid Glands	
ı	An Antipyrin Exanthem, with Ulceration	
		<b>2</b> 53
i	Disturbances of the Skin due to Defi-	
i	ciency of Fat	253
	The Treatment of Dyspepsia	253
	Hyperchlorhydric Dyspepsia	
	The Ice-Bag as a Therapeutic Agent	
	Ointment for Urticaria in Children	258
	Cold Applications in the Treatment of	
ı	Continued Fever	
	The Treatment of Diabetes	258
ı	An Injection for the Insomnia of Chil-	
	dren	259
	The Treatment of Ascites	259
Ì	The Treatment of Typhoid Fever by	
1	Bathing	262
	Notes on an Accident under Chloroform	262
ı	Note on Ether as a Menstruum in Medi-	•
	cation by the Skin	264
ĺ	The Prescribing of Prisms	
ĺ	Simple Method of operating for Partial	,
	Tenotomy of the Recti Muscles (Grad-	
	uated Tenotomy)	~68
	Further Communication on the Treat-	200
ļ	ment of Trachoma	-40
l	Kerato-Malacia in Young Children	
		270
	The Employment of Oil of Tamaquary	
I	in Corneal Affections	270
	Extraction of Cataract by a Semi-Ellip-	
į	tical Section without Iridectomy	
ļ	Pterygium and the Operation for Cataract	
ĺ	Eserine in the Treatment of Glaucoma	272
	Ocular Operations performed in the Oph-	
ı	thalmic Service of the Venetian Hos-	
	pital	273
į	1 -	

A New Method of Manipulation for Replacement of the dislocated Lower Jaw 273 Treatment of Hemorrhoids	PAGE
Treatment of Hemorrhoids	
A New and Safe Method of cutting (Esophageal Strictures	placement of the dislocated Lower Jaw 273
Esophageal Strictures	Treatment of Hemorrhoids 273
Resection of the Liver	
Use of Lactic Fermentation in the Bladder as an Antiseptic Application in Cases of Ammoniacal Complications of the Urine, and the Treatment of Putrefactive Wounds and Sores	
der as an Antiseptic Application in Cases of Ammoniacal Complications of the Urine, and the Treatment of Putrefactive Wounds and Sores	Resection of the Liver 275
Cases of Ammoniacal Complications of the Urine, and the Treatment of Putresfactive Wounds and Sores	Use of Lactic Fermentation in the Blad-
of the Urine, and the Treatment of Putrefactive Wounds and Sores	der as an Antiseptic Application in
Putrefactive Wounds and Sores	Cases of Ammoniacal Complications
Neuralgia of the Brachial Plexus treated by Excision of an Osteoma of the First Rib, and subsequently by Application of Cocaine	
by Excision of an Osteoma of the First Rib, and subsequently by Application of Cocaine	Putrefactive Wounds and Sores 275
Rib, and subsequently by Application of Cocaine	Neuralgia of the Brachial Plexus treated
of Cocaine	by Excision of an Osteoma of the First
Treatment of Spina Bifida	Rib, and subsequently by Application
Treatment of Coxalgia	of Cocaine 276
The Antiseptic Management of Wounds 277 Operation for Cerebral Tumor	Treatment of Spina Bifida 277
Operation for Cerebral Tumor	Treatment of Coxalgia 277
The Treatment of Pyzemic Thrombosis of the Lateral Sinus	
of the Lateral Sinus	Operation for Cerebral Tumor 279
The Rational Treatment of Bubo	
Treatment of Bladder Tumors	of the Lateral Sinus 280
The Treatment of Hemorrhoids by the Clamp and Thermo-Cautery	The Rational Treatment of Bubo 281
Clamp and Thermo-Cautery	Treatment of Bladder Tumors 281
The Subcutaneous Use of Doses of Sub- limate in the Treatment of Syphilis s82	The Treatment of Hemorrhoids by the
The Subcutaneous Use of Doses of Sub- limate in the Treatment of Syphilis s82	Clamp and Thermo-Cautery 282
Reviews 983	limate in the Treatment of Syphilis 282
Reviews 283	
R6VI6W4 283	Badama
	Meviews 983

### Correspondence.

London Letter 2	18
-----------------	----

### Notes and Queries...... 288

### Original Communications.

TREATMENT OF CHRONIC VALVULAR
DISEASE OF THE HEART.

READ BEFORE THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

By JAMES TYSON, M.D., Professor of Clinical Medicine in the University of Pennsylvania.

SINCE there are certain points in the treatment of disease of the cardiac valves which are the same for the different orifices, I shall consider first such measures as are thus common, referring more especially to mitral and aortic disease.

In the first place, it is well known that there exist chronic valvular defects at either of these orifices which give rise to no symptoms whatever and are often accidentally discovered. From the stand-point generally conceded that such defects themselves are irremediable, it is clear that, in the absence of symptoms, medicinal treatment is quite unnecessary. On the other hand, it is a happy circumstance when the subjects of such lesions are made aware of their presence, because they are enabled so to regulate their mode of life as to prevent harmful consequences, either symptomatically or organically. Such persons should avoid overexercise and excitement. Running, or even walking rapidly, hurriedly ascending stairs, extremes of passion of all kinds, and especially of anger, should be avoided, as also exposure and irregular living. There is a second grade of involvement of either orifice which demands the same treatment in a more imperative manner, since its omission results in a loss of compensation, manifested by dyspnœa, palpitation, and præcordial distress, promptly relieved by the treatment above specified.

In a more advanced degree of interference with normal function, the treatment becomes different with the seat of the lesion. Let us first consider lesions of the mitral valve, and first the most common of all forms, -mitral regurgitation. The blood flows back into the left auricle during systole of the ventricle, at a time when all communication between these cavities should be cut off and the movement of the blood should be forward only. Averted for a time by hypertrophy of the left auricle, engorgement of the lungs ultimately results, with defective aeration of blood and consequent shortness of breath. This effect is at first counteracted by the increased effort of the right ventricle, whence its hypertrophy, with sharp accentuation of the pulmonary second sound heard at the left edge of the sternum.

So long as compensation is maintained by the supplemental action of an hypertrophied left auricle there is probably no sign of embarrassed breathing, or irregularity, or præcordial oppression, or digestive derangement; but as soon as the auricle begins to fail, the engorgement of the lungs begins, and the hypertrophy of the right ventricle comes to the rescue. And even it may, for a time, by the reinforcement it gives to the left auricle, effect the required compensation. But a suspension of the conditions which co-operate to help it, or a slight yielding of its muscle to the resistance to be overcome, demands assistance. The hearttonics, of which digitalis is the type, are the agents pre-eminent for this purpose. they operate by directly increasing the force of the right ventricle and left auricle, and thus contribute to the compensation, can scarcely be doubted; but that they help also to make the closure of the mitral orifice more complete by forcibly increasing the contraction of the left ventricle, seems also reasonably sure, since the experiments of Ludwig and Hesse have made it so plain how this can occur. They have shown that the mechanism for closing the mitral orifice does not reside in the valve alone, but that the surrounding muscles of the ventricle have an active share, not only in floating up the valve curtains, but in reducing also the size of the opening which these valve curtains have to close. This is, of course, less applicable in chronic valvular conditions where there is stiffness from calcareous change, than where regurgitation results from simple feebleness of muscle in anæmia and after the infectious fevers.

The effect required of this class of drugs varies with the degree of obstruction to be overcome, and the doses vary accordingly. Very often the heart requires but little steadying to enable it to accomplish the desired end, and moderate doses-such as 5 minims of the tincture of digitalis once in eight hourssuffice. On the other hand, it is a mistake to give too small a dose, and too great timidity often results in failure. Doses of 15 minims of the tincture of digitalis, every three hours, and corresponding doses of the other preparations are often necessary, and sometimes produce magical effects. The irregular and halting pulse becomes regular, the dropped beat is again taken up, the dusky lips become pink, the scanty urine is increased, the shortness of breath disappears, and calmness and quiet succeed distress and restlessness. As soon, however, as the desired effect is produced the dose should be lowered. The same principles apply to the management of the still more serious engorgements of the venous system which succeed upon tricuspid insufficiency, and produce dropsies and serous effusions. It is in the effort to drive the blood through the engorged veins that the left ventricle finally hypertrophies in this form of disease.\* Its failure to accomplish this through its inherent power demands the same remedies which the right ventricle needed at an earlier stage to overcome the lung engorgement, and here it is that the large doses of cardiac stimulants are demanded.

This engorgement is also relieved by the use of purgatives, and as the portal area, including

<sup>\*</sup> At this point I may allude parenthetically to the matter of hypertrophy of the left ventricle in mitral regurgitation. It has always been somewhat a matter of conjecture as to precisely when it occurs. It is commonly said that it is the result of the hypertrophy of the left auricle reinforced by hypertrophy of the right ventricle. But while these agencies doubtless contribute to a distention of the left ventricle and tend to dilatation, it is doubtful, to my mind, whether they tend to hypertrophy. For the idea of hypertrophy implies increased resistance, and there is no increased resistance with a patulous aortic orifice and a patulous mitral orifice, and it is only when the movement of the arterial current be-. comes delayed by the full veins that this condition of increased power, and therefore of hypertrophy, comes into play. So that it appears to me that while distention and enlargement of the ventricle is an early result of mitral regurgitation, hypertrophy is not.

the liver itself and the stomach, is especially involved, mercurial purgatives are especially indicated. Five to 10 grains of blue mass at bedtime, followed by a saline in the morning, relieve the congestion, and with it the nausea and indisposition to take food which attend Such remedies may be resorted to semioccasionally. Sometimes the continuous use of small doses for a long time—say ½ to 1 grain of blue mass three times a day—are more efficient. The old-fashioned combination of calomel, squills, and digitalis-in doses of ½ grain of the first and 1 grain of the second and third three times a day, or smaller doses more frequently repeated—is sometimes most happy in its effect. Digitalis is a remedy always better intermitted to obtain its best effects, and a remedy, too, which, having once excited nausea, is thereafter badly borne. It does, however, sometimes happen that digitalis may be given continuously in moderate doses—say 5 minims three times a day—with great advantage, while its omission is followed by signs of failing compensation. It is generally recognized that digitalis produces also contraction of the arterioles, and that through this, in connection with the forcible systole, the arterial pressure is increased. This effect is desirable and useful in the early stages of mitral regurgitation, before tricuspid regurgitation and dropsy have set in. Later in the disease, however, when dropsy has set in, this effect militates against the diuretic action which is so much needed. How this may be overcome will be mentioned later.

Before leaving the subject of the heart-tonics in mitral regurgitation, it may be worth while to spend a few minutes on that of the relative value of the different preparations of digitalis. While testimony is generally favorable to the infusion as the most efficient remedy, yet, on account of convenience and accessibility, the tincture is mostly used. I have on many occasions reiterated that I was inclined to believe that the greater apparent efficiency of the infusion was partly due to the fact that it was generally given in larger doses. Thus, a tablespoonful, or 1/2 ounce, is not an infrequent dose of the infusion, while 10 minims, or 20 drops, of the tincture and I grain of the powder are not often exceeded. When it is remembered that a half-ounce of the infusion, as made by the U.S. Pharmacopœia, represents nearly three grains of the powder, or 20 minims of the tincture, one may understand why it is more efficient. Recently, however, I have thought the infusion better borne by the stomach than equivalent doses

of the tincture. It may be that the cinnamon-water with which it is made has this effect.

Of remedies which may be substituted for digitalis, strophanthus should, perhaps, be first mentioned; not that it is always the best. Great expectations were excited when the results of strophanthus were first published by Fraser. It will be remembered it was reported as having all the effects of digitalis on the left ventricle without the contracting effect on the arterioles. The expectations entertained were not, however, realized by clinicians, and it soon fell into partial disuse. Recently I have . resumed the use of strophanthus in much larger doses, having given as much as 10 minims, or 20 drops, every two hours for forty-eight hours, without interruption, and with good results. It is undoubtedly better borne by the stomach than digitalis.

Caffeine is an admirable heart-tonic in mitral regurgitation. I do not give less than 3 grains at a dose, but seldom give more, every three hours. When caffeine has been given in full doses for some time it produces mental symptoms quite characteristic, consisting in hallucinations not unlike those of delirium tremens, the patient imagining there are persons, animals, and other objects about him, and he is sometimes difficult to control. They, however, cease immediately when the drug is discontinued. Another effect of caffeine, which sometimes interferes with its usefulness, is its effect in inducing insomnia.

Sparteine sulphate is another heart-tonic which I have come to value very highly, especially where a diuretic effect is desired. The dose I have come to rely upon, after a good deal of experience, is never less than ½ grain, increased to ½ grain, three, four, and five times a day.

In the much rarer disease of simple mitral stenosis, compensation is even easier and longer maintained by nature's own resources than in mitral regurgitation. Here, for evident reasons, there is no tendency to dilatation or hypertrophy of the left ventricle. On the other hand, hypertrophy of the left auricle becomes a conspicuous condition, succeeded by hypertrophy of the right ventricle, for the same reason as in mitral regurgitation.

Especially easy is it to maintain compensation if the narrowing is not too great and if there is a well-preserved left auricle and a strong right ventricle. If, however, the mitral narrowing is extreme, it is plain that the pulmonary engorgement will become greater if we increase the force of the right ventricle. Much more cautious must we be, therefore, in the use of digitalis. Much more needed under these circumstances is relief to the pulmonary congestion, which in turn will relieve the right heart-tension. For the same purpose aconite is sometimes of advantage in these cases in the shape of small doses, say I minim or 11/2 minims every two hours or every hour, watching its effect. It is possible that it is through a somewhat similar action that convallaria majalis—a remedy in which most observers have been disappointed—has been found useful by Dr. Sansom\* in mitral stenosis, and also by the French school as represented by Germain Sée. By these observers it has been found diuretic, increasing the twenty-four hours' urine to 85 and even 115 ounces, reducing the pulse-rate, regulating irregularity, and improving the breathing, even when accompanied by tricuspid regurgitation. The doses given are 10 to 20 minims of the tincture three times a day, and it may with advantage be associated with caffeine, which alone sometimes acts better than digitalis. More effectual than either of these remedies to relieve pulmonary congestion is bloodletting, and repeated small bleedings are often of great advantage in this form of chronic valvular disease.

The principles governing the treatment of combined mitral regurgitation and stenosis are rather those of mitral regurgitation than of mitral stenosis.

And what shall be the treatment of pure aortic disease? It will be remembered that both aortic obstruction and regurgitation give rise to hypertrophy of the left ventricle, and that this is compensatory in character, for a time quite sufficient to ward off any unpleasant symptoms, and for a still longer time competent to do this when associated with a quiet life, the absence of excitement, of exposure, and of privation. Its well-marked degrees are accompanied with a powerful systolic impulse, a symptom which is of itself at times a source of great discomfort. Shall we, then, give hearttonics which increase the force of this thumping blow? Certainly not. Shall we give aconite or veratrum viride, which slow the heart and diminish the force of its stroke? Not as a rule. But there are times when these remedies are indicated. When, as the result of overexertion, or undue excitement, or gastric derangement, the heart is turbulently overactive, and even irregular in its rhythm, then often I have seen aconite in small doses—say 1 minim, or 2 drops, repeated every half-hour or hour, under close observation—act happily, especially when combined with bromide of potassium, say 15 grains. The tincture of veratrum viride may be given in slightly larger doses. As soon, however, as this period is past, the aconite should be omitted.

We want rather in this condition to find remedies which will tend to maintain the integrity of the heart-muscle. Such are strychnine, iron in small doses, arsenic, and nutritious, easily assimilable food. Especially useful are well-ventilated living- and sleeping-rooms, wholesome out-door life, with moderate, deliberate muscular exercise. On the other hand, the mountain-climbing advocated by Oertel seems irrational and dangerous. Every one who has had experience knows that the high altitudes are not well borne by cardiac cases of any kind.

Such measures as these tend to ward off the next stage, for sooner or later the integrity of the muscle of the ventricle yields, dilatation is added to hypertrophy, the auricular ventricular orifice enlarges, and we have mitral regurgitation. Then the treatment becomes that for mitral disease.

The treatment of aortic regurgitation and of aortic stenosis with regurgitation is similar to that of aortic stenosis.

Treatment of Dyspnaa.—As the dyspnaa is primarily the result of deficient blood-aeration in the congested lungs, the same remedies' which force the blood through these organs, and thus relieve the congestion, tend also to relieve the dyspnæa, and often do so. When the dyspnœa persists, it is frequently caused by effusions into the pleural cavity, which are most promptly and successfully removed by tapping, although a blister may also answer the purpose. Repeated tapping may be necessary. Dyspnœa not thus relieved demands an opiate, and of opiates, under these circumstances, morphine is the best. One-quarter grain at bedtime, by the mouth or hypodermically, gives unspeakable comfort. Hoffmann's anodyne will sometimes relieve the milder degrees, and should perhaps be tried first, as it is always desirable to put off the use of morphine as long as possible. Sulphonal may be tried in full doses of 15 grains.

Treatment of Dropsy.—In like manner the measures that relieve the congestion and dyspnoea tend also to relieve the dropsy, but special means are also necessary. Here it is that full doses of digitalis are especially indicated, and at close intervals, every three hours, and even

<sup>\* &</sup>quot;The Treatment of some of the Forms of Valvular Disease of the Heart" (Lettsomian Lectures, 2d ed., with corrections, London, 1886).

every two hours. But these measures are often insufficient. And I have become satisfied, from actual and repeated experience, that an essential condition of the successful treatment of the more obdurate of the cases is the restricted ingestion of liquids. With the tissues waterlogged and secretion insufficient, it is plain that copious liquid ingestion only increases the difficulty.

The principle of the Matthew Hay method is correct, but in practice it is impossible, because, with an already congested stomach, solids cannot be digested without an admixture of liquid, and further embarrassment results from the effort to dissolve them and from the presence of undigested residue. Therefore I not only omit solid food altogether, but reduce the liquid to a minimum that will sustain life,—not more than two ounces every two hours, and that only during the waking hours. To this I add the use of purgatives. While diuretics sometimes fail us, we can always secure an effect from purgatives. A daily morning dose of Epsom salts or Rochelle salts is given. Then, when action of the bowels begins, full doses of digitalis, or caffeine, or sparteine, associated with nitro-glycerin, are almost sure to be followed by copious diuresis, and when these cases start up, it is astonishing what quantities of urine are passed. I attach much importance to the association of nitro-glycerin with digitalis at this stage. A 100 to 10 grain may be given as often as the digitalis and simultaneously. Elimination by the bowels and kidneys being simultaneously stimulated, the sucking up of the interstitial fluid is greatly favored and often rapidly brought about. If these measures be associated with chest-tapping, which may be required, the diuresis set up is often enormous, while the swelling rapidly declines. As diuresis is established, or hunger sets in, the quantity of milk allowed may be increased, and when the dropsy has entirely disappeared, a cautious return to solid food may be permitted.

For irregularity of the heart-action and palpitation, which are more common in mitral disease, belladonna is also a useful remedy. I have had little experience with its combination with digitalis, recommended by Da Costa, but I do know that a belladonna plaster placed over the palpitating heart is one of the most efficient agents in subduing it. Nitro-glycerin is often very useful to the same end. One the grain, rapidly increased to to grain, three times a day, is the proper dose. Cardiac pain is also sometimes relieved by the same remedy.

ENURESIS IN CHILDREN.

CLINICAL LECTURE DELIVERED AT THE PHILADELPHIA
POLYCLINIC.

By J. Madison Taylor, M.D.,

Professor of Diseases of Children at the Philadelphia Polyclinic;

Assistant Physician to the Children's Hospital and to the

Orthopædic Hospital, etc.

THE treatment of enuresis in children does not consist of the use of any one particu-It seems to me a misleading idea, lar drug. which is frequently advanced in the medical journals, that good results from any particular drug, applied to a large number of cases, is of itself convincing. The parentage of disease, or even of disorders of function, is almost never single, and is frequently of very diverse origin. Much appears in literature on the treatment of this very troublesome disorder, being usually directed to the use of some one particular drug, and from its use conclusions are supposedly drawn, or else from some peculiar measures, the use of which is assumed to be of almost specific value.

Looking to the causes of bed-wetting in children, we have, of course, mechanical causes, as of adherent folds of mucous membrane in and about the genitals, occurring in both boys and girls; also mechanical irritation of foreign bodies, as of seat-worms; then come the diathetic causes, of which the chief one in early childhood is uricæmia,—a very common condition, and one which often escapes suspicion. Again, there are the reflex causes, which may be due to some combination of those already enumerated, or else the result of factors outside of these, such as emotion, the habits of the child's daily life, etc.

The instability of the nervous balance in children is a most interesting but ofttimes puzzling problem. The vaso-motor systemic variation and its clinical bearings you often hear me discuss here at times with conviction, at others conjecturally, but always as of fascinating interest.

In searching for the particular causes which bring about this disagreeable disturbance of function in the particular individual, it is very important to bear in mind that several of these causes usually coexist, and that, moreover, those which seem of least importance may in reality exercise the largest degree of potentiality.

Let us turn for a moment, then, to a consideration of the mechanism by which the bladder and urethra are controlled. As Dr. Lauder Brunton has pointed out in one of his lectures on therapeutic action of drugs, a failure of the right balance of power in the motor mechanism

of the bladder is due to two conditions of activity: first, want of power to evacuate; and, second, want of power to retain. So that, in looking to a therapeutic explanation for the involuntary passing of water in children, it is necessary to consider the possibility of the one or the other of these factors predominating. Again, back of this comes the question of secretion,—the necessity to consider whether the output of urine is sufficiently fluid, so that it may pass readily into the bladder, as, for instance, where a child takes an insufficient amount of fluids. Here the diathetic causes referred to, especially uric acidæmia, must be carefully studied. It does not seem to be well recognized that this condition is very common in little children,-quite as common, relatively, as in older people, --- and that it is especially brought out by certain conditions; for instance, over-fatigue in play or in excitement precipitates the uric acid in the blood, and several conditions result, one of these being a temporary feverishness and general unrest, which goes by the name of febricula. It may also manifest itself as tonsillitis, or several forms of pharyngeal irritation, and even if such results as these do not arise, at least there is a precipitation of the uric acid in the urine, and this may cause several kinds of irritation, either in the kidney or bladder.

When the bladder becomes loaded with this over-acid urine, it is induced to make especial efforts to get rid of it, and where this cause has existed for some little while, a loss of control results in a mortifying outflow of urine during hours of relaxation, especially in sleep. will also transpire even in waking hours. In states such as these, again, the urine is likely to be less in quantity, although sometimes it is in very great excess, and then we have the additional element introduced of overmuch urinary secretion and consequent hyperdistention of the bladder. Then there are many other conditions which produce relative overfilling of the bladder with irritating urine, as where it is shown to be phosphatic or loaded with alkaline carbonates. These are usually the result of depressed states of health from diverse causes. Again, there are paralytic states to be considered; and just here let me call attention to the very great importance of searching shrewdly for all possible evidences of slight palsies. It has been my experience to come upon children in whom slight hemiplegias with descending degenerations had occurred, which had escaped recognition by parent or medical adviser, except in the form of remote clinical findings which were not credited with having any such origin. A careful knowledge on this subject is one of the most important equipments in studying the differential diagnosis in children's diseases.

Also the palsies due to some recent acute trouble, either a central palsy, as polio-myelitis anterior, the so-called essential palsy of child-hood where enuresis is occasionally a symptom, and certain peripheral disturbances, the most common of which, perhaps, is diphtheritic palsy, should be considered. These states may be only recognized long after the original malady has subsided out of sight, and, indeed, may be only its remote results, producing an inscrutable intermingling of causal factors which perpetually needs our utmost vigilance.

The mechanism of the evacuation of the urine, so far as I have need here to consider it. consists of the muscular activity, first of the fibres of the bladder, especially about the fundus, and the muscular fibres of the sphincter, which are voluntary. The one drug which has gained the most wide-spread confidence in the relief of enuresis is belladonna, because it would seem to decrease the pushing power of the bladder by quieting the involuntary muscular fibres of the fundus, thereby lessening the tendency to ready evacuation, by reducing the over-active fundus to normal action. Various other medicaments are supposed to do this more or less well, as the bromides and other drugs which enjoy the title of depressor motors. Hyoscine, whose general action is very like that of atropine, has an even more soothing or tranquillizing property than belladonna, and in the form of the hydrobromate of hyoscine has proven in my hands an extremely useful remedy for disturbed vascular states, especially those of overexcitation. The action of this particular group of vascular tonics is much more wide-spread than any local effect upon the walls of the bladder, of course having to do with lessening secretion, etc.; but it is well to remember that in these, as in the use of so many other of the drugs which have very evanescent influence, it is important to get the physiological action of the drug before you have a right to expect any advantageous effect.

Now, in using belladonna or hyoscine hydrobromate, which is rather better, it is necessary in producing a result to push to its physiological effect. This is very easily controlled, too, because, long before any harm can be produced, certain disagreeable symptoms, very easily and subjectively recognized, exhibit themselves, such as over-dryness of the throat and nose and dimming of vision, which not only the mother, but even the little patient can plainly observe.

Again, it is my experience that in using these mydriatics for their vascular effect, it frequently happens that the desired result is obtained long before any objectionable symptoms are produced, and not only so, but these remote symptoms are very much delayed in a case of vaso-motor disturbance, the patient enduring a very much larger dose of the drug than he could under ordinary conditions. Therefore, as a practical suggestion in using belladonna in connection with the subject under discussion, it is necessary to systematically increase the dose given day by day until marked results are obtained. Thus, in a very few days it is frequently possible to either get a cure where all else has failed, or to recognize the inutility of the measure in the particular instance and abandon it for a better one.

Now, there is another drug which has been a good deal lauded in conditions of urinary disturbance,—namely, cantharides,—in which I have had very little experience, but enough to recommend its use under suitable conditions. This, in small doses, is believed to have the power of expediting the contraction of the sphincter muscle, hence enabling the individual to retain control over a bladder which itself may be normal. Here, again, it is important to slowly and cautiously increase this until some effect be noted, and, indeed, a combination between the belladonna, which tranquillizes an over-active fundus, and cantharides. which emphasizes voluntary control over the sphincter muscle, would seem to be a beautiful physiological rein through which an obstreperous bladder might be entirely controlled.

There are numberless drugs which have been recommended for this on mostly empirical grounds, and I have no doubt that a great many others can be found to act very nicely in certain instances, especially where the simple ones that I have suggested are found to be of no effect. It is scarcely worth while to discuss these, because they can all be reduced by any one to a working formula by a just knowledge of their physiological effects, and personally I very much dislike polypharmacy, or the mingling of hosts of medicaments, and expecting any definite results from such a jumble.

Along with the vascular tonics alluded to, it is very often well to add an auxiliary, as some form of alkali,—e.g., bicarbonate of sodium or, better, phosphate of sodium,—where there is inactivity of the liver. This use of phosphate of sodium where the digestive tract is disturbed is very well worth remembering. In

acid states of urine some alkali is needed, but these are generally of a tranquillizing nature and go well with either of the drugs discussed.

Now, the question of food must be considered as a very important collateral. It is a working axiom that the most tranquillizing food is that which is most uniform in character, with the smallest amount of residual waste, and the type of this is milk. You doubtless know perfectly well that most disturbances of urination in adults demand the use of milk alone, or, at least, as a very important basis of the dietary. By using milk you do another thing,—you reduce the uncertain factors involved in that manifold process—digestion—to the simplest working formula.

Continuing the discussion of the digestive tract, it is very important to be sure that the bowels are evacuated, and an admirable rule is to make sure of this evacuation at night rather than in the morning, at least, to have the bowel thoroughly cleansed, and better by an enema, a short time before going to bed.

There is one very pretty remedy suggested for nocturnal enuresis that deserves passing notice, although it has been of very little use in my hands, and that is the tilting of a bed so that it shall be higher at the feet than at the head, upon the theory that the urine pressing down against the sphincter, or the neck of the bladder, produces mechanical irritation, which causes that muscle to relax, and hence the urine Therefore it is recommended to to gush forth. lie at night with a complete reversal of our ordinary practice,-namely, with the heels high and the head low. I tried this measure very hopefully, and must say without any special measure of success, although I am prepared to admit that it may be a useful adjuvant to other measures in difficult cases.

It is frequently recommended, especially by our surgical brethren, to dilate the urethra, especially of boys, with the solid sound. This, it is conceived, produces some important counterirritation, and may be the means of finding out a calculus in the bladder, of which enuresis is a symptom. I have known this to be of value, and hold it in reserve where severe measures are demanded.

Reflex irritation of the external organs constitutes a very considerable factor, many times, in this disorder. In boys it is very common to find adherent prepuces with narrow openings, extensive areas of adhesion upon the glans penis, and retention of secretion, which acts like a foreign body. Always inspect the penis when endeavoring to combat this and many other simple disturbances in boys.

Now, as to what shall be done here I also have very definite convictions. Circumcision is an extreme measure, although, I confess, at times a proper one. The circumcision practised by such an enormous number of very intelligent people—the Jews and Mohammedan's -would seem to prove that this has a specific value. In a pretty long clinical experience, however, among children, I have usually found it quite sufficient to strip the parts thoroughly, making sure that readhesions do not occur. The method that I have pursued for fifteen years, and in a very large number of instances, it being a routine measure with myself and my assistants at the Children's Hospital Dispensary and here at the Polyclinic,—is this: I take a blunt-pointed probe, or similar instrument, and cautiously run it around over the head of the glans from the frænum on one side, by small circular motions, to the frænum on the other, and then advancing the point of the probe a little, again rotate back to the first point to the right, and then over to the left, until gradually I have broken up the adhesions under the foreskin, and then, when this is done, I introduce into the cavity thus formed some lubricant, and make sure of its proper distribution. Afterwards the foreskin may be gently retracted; but if the opening be small, I postpone this for a day or two, when, again running the probe back and forth over the glans, very likely the foreskin can be retracted. Failing, I wait a few days longer, and if the os still be very constricted, I gently stretch it by some suitable instrument, as a pair of dressing forceps, and thus gradually secure my purpose. The mother is carefully instructed to wait a certain length of time after my manipulations, and then herself to retract, wash, and reanoint the parts; to be done at intervals of two or three days. A more rapid stripping may be safely done, but in the manner described everything needed is usually accomplished, and with the minimum of pain and discomfort to the child and of alarm to the mother, always an important consideration.

In little girls, irritations about the vagina must be looked for in the same way, although occurring less frequently. The prepuce of the clitoris is not seldom adherent, just as occurs in boys. The process of relieving it is very much easier in the girls, however, and yet of quite equal importance. It may sometimes be necessary in these procedures to use a little cocaine locally, but it is well to bear in mind that this is a very dangerous measure. I have known a mild solution of cocaine applied to the urethra, both in children and in adults,

to produce most unexpected and serious depression.

There are numberless causes which it is impossible here to enumerate contributing to this disorder. Extensive skin-lesions, as of eczema or dermatitis, need to be eliminated in treatment.

## THE TREATMENT OF ECZEMA OF THE LOWER EXTREMITIES.

By MILTON B. HARTZELL, M.D., Instructor in Dermatology, University of Pennsylvania.

NE of the commonest varieties of eczema met with in adults, especially in those past middle life, is that which occurs upon the The frequency of its occurrence, the pain and annovance it causes, and the obstinacy with which it oftentimes persists, make the subject of its treatment of more than ordinary importance. The long list of remedies and the great variety of methods of treatment to be found in text-books and journals might seem to render superfluous any further discussion of the subject; but these only serve to emphasize the truth of the statement that the curability of any disease is apt to be in inverse proportion to the number of remedies proposed for its cure.

It is not the purpose of this paper to discuss all the drugs which have been found more or less useful in the treatment of eczema, nor to propose new ones, but, selecting some of the old and a few of the newer remedies, to present in some detail the method by which these may be made serviceable. Notwithstanding the obstinacy with which the disease often resists treatment, the intelligent selection and persevering employment of the therapeutic resources at our command will in most cases, if not in all, result in cure. But the physician must not be content with the mere ordering of lotions and ointments; cases of eczema are to be treated, not merely prescribed for. Much may be accomplished, even with an indifferent remedy, if used with method; nothing but disappointment will result from the use of the best one, if improperly applied.

Although every variety of eczema may be found upon the legs, yet in most cases the disease appears in one of two forms,—either it is moist, red, and inflammatory in a marked degree, or it is dry and scaling, accompanied by a moderate amount of hyperæmia.

In the treatment of the first-mentioned form it is prudent to begin with the mildest applications, since even moderately-stimulating ones are pretty sure to aggravate the existing inflammation. A method of treatment of approved value consists in the use of a mild lotion, such as black wash or a saturated solution of boric acid, followed by some non-stimulating ointment, as the ordinary oxide-of-zinc ointment of the Pharmacopæia. The lotion should be lightly dabbed upon the parts for five minutes, and allowed to dry before applying the ointment. If the oozing is very abundant, we may employ, instead of an ointment, the following paste:

R. Pulv. amyli,
Pulv. zinci oxidi, of each, Zii;
Petrolati, Zss. M.

This paste, being adhesive, affords better pro-

tection to the inflamed skin than the ordinary ointments, and is often preferable to them. Just here a word as to the manner of removing this Its removal should not be attempted with soap and water, but it should be thoroughly softened with cosmoline abundantly applied, and afterwards wiped off with a soft The application of lotion and ointment should be made three or four times in the twenty-four hours, the frequency depending upon the amount of discharge and inflammation present. When the inflammatory symptoms are of moderate severity, a lotion of ichthyol, fifteen to twenty grains to the ounce of water, may be used with good effect, oftentimes causing a marked diminution in the amount of discharge, and lessening hyperæmia. This lotion should also be followed by soothing ointments, otherwise the skin becomes dry, tense, and painful. Recent experience leads the writer to the conclusion that much more benefit is to be derived from ichthyol employed as a lotion than when used in ointments. Treatment of this kind will in most cases transform the moist, red, burning skin into a dry, scaling, and itching one within a comparatively short time. When this has been accomplished, lotions are, as a rule, no longer so useful, and we may omit them, using ointments alone. In this stage of the disease we may prescribe with satisfactory results an ointment containing ten to fifteen grains of salicylic acid to the ounce; or, better still, we may use the above-mentioned paste with the same quantity of salicylic acid added. This salicylic-acid paste is in many cases a valuable remedy, causing rapid improvement. If, as is often the case, itching is a marked symptom, a paste containing ten to fifteen grains of menthol to the ounce will in many cases afford relief, or the menthol may be added to the paste of salicylic acid just mentioned. Carbolic acid is another well-known and effective antipruritic agent, and may be used in the same strength as menthol. It is well to remember, when prescribing for the relief of itching, that most, if not all, of the antipruritics are capable of exciting inflammation of the skin if used in too great strength, and that thus they may increase the patient's suffering instead of relieving it.

Among the newer remedies recently employed in the treatment of eczema, creolin promises to be a useful one, and from recent experience with it the author is inclined to regard it as of considerable value; the best results are obtained from it after the moist stage has passed. Although it may be used as a lotion, the following ointment is preferable:

R. Creolin, mxv to xx; Ung. zinci oxidi, 3i. M.

Occasionally cases are met with in which greasy applications of every kind disagree, increasing the burning and pain to such a degree that their use is prohibited. Under such circumstances we must limit ourselves to the use of lotions and dusting-powders. In the early stages of the disease, when the oozing is abundant, the calamine lotion, with a small quantity of glycerin added,—

R. Calaminæ, zi;
Pulv. zinci oxidi, zii;
Glycerini, fzi;
Liq. calcis,
Aquæ, of each, fzii,—

will often prove most useful, combining, as it does, the properties of a lotion and a dusting-powder.

Instead of the calamine lotion, a saturated solution of boric acid may be applied, followed by a dusting-powder of talc or the following:

R Pulv. zinci oxidi, 3ii;Talc, 3vi. M.Sig.—Dusting-powder.

Among lotions which may be employed after the acute symptoms have subsided, mention should be made of the liquor carbonis detergens, which is distinctly of service in lessening the itching and hyperæmia. In the beginning its strength should rarely exceed one drachm to the pint of water; later it may be increased to two to three drachms to the pint.

An old and one of the most valuable remedies in the treatment of chronic eczema is tar in its several forms, but its use requires the nicest care and judgment, since, like many other valuable remedies, it is quite as capable of doing harm as good. It should never be used in the moist stage of eczema, but only

after the acute inflammatory symptoms have subsided, and then cautiously.

A favorite method with the author of employing this useful agent is to apply the following with a flat camel's-hair brush:

B. Ol. cadini, f3i to f3iii; Ol. amygdal. dulc., q.s. ad f3i. M.

Brushed lightly over the diseased surface, this is much less likely than ointments of tar to cause undue irritation. If, after a few days' use, it causes any considerable degree of inflammatory reaction, it should be put aside for the time and some milder application used, such as the paste of salicylic acid mentioned above.

By thus alternating the oil of cade with some mild ointment we may often succeed in establishing a cure in cases properly selected.

If the eczema is dry, with a tendency to scale when it first comes under observation, we may proceed at once to employ slightly stimulating ointments and washes. Even here we should be careful to avoid overstimulation, lest we have the mortification to see our patient become worse instead of better. In these cases we cannot do better than begin with a paste of salicylic acid, ten grains to the ounce, which, at the end of five days or a week, may be replaced by an ointment of creolin, fifteen to twenty minims to the ounce of oxide-of-zinc ointment. If itching is a prominent symptom, the menthol paste already mentioned will frequently render good service.

As is well known, eczema of the legs is often accompanied or followed by chronic ulcers, which add greatly to the patient's suffering and are notoriously rebellious to treatment. No attempt will be made here to discuss at length the management of this troublesome complication, but the writer wishes to call attention to an agent which he has found of the greatest use in relieving the pain, which is at times excruciating. This remedy is resorcin, in the form of a three- to five-per-cent. ointment. While other remedies are perhaps superior to this one in promoting the healing of these ulcers, none are so sure to allay pain.

Internal treatment in eczema of the legs is of secondary importance, since we possess no remedy which, given internally, exercises any direct curative effect upon the disease. The bowels should be kept freely open, especially if varicose veins are present, in order that the return of the blood from the lower extremities may not be interfered with by a distended colon. A heaping teaspoonful of phosphate of sodium dissolved in a small tumblerful of hot

water, taken in the morning upon rising, is a mild laxative, which is usually found as efficient as the bitter mineral waters and more agreeable.

In conclusion, the following points are worthy of special attention:

- a. In beginning treatment always use mild applications. The observance of this rule will never be regretted; its violation may be.
- b. Avoid the use of soap and water, using oil or cosmoline to remove scales and crusts.
- c. The manner in which a remedy is used is quite as important as the remedy itself.

ACNE, ACNE ROSACEA, SEBORRHŒA, AND SYCOSIS.

Notes from Ten Years' Service at the Philadelphia Dispensary for Skin-Diseases.

BY HENRY W. STELWAGON, M.D., Clinical Professor of Dermatology in the Jefferson Medical College.

ACNE.—This disease was represented by two hundred and seventy cases, or a proportion of 6.5 per cent.; of these, one hundred and twenty-three were males and one hundred and forty-seven females. The ten years between the ages of puberty and maturity—between the ages of fifteen and twenty-five—furnished one hundred and ninety-nine of the cases. The youngest patient was aged thirteen and the oldest aged fifty-three. The relationship of age to the disease is shown in the following:

Years.	Cases.
Under 15	18
Between 15 and 20	108
Between 20 and 25	91
Between 25 and 30	28
Between 30 and 35	12
Between 35 and 40	8
Between 40 and 45	3
Over 45	2

In two hundred and thirty-seven cases the eruption was essentially confined to the face; in a proportion of these several or more scattered lesions showing themselves from time to time upon the neck and shoulders. In twenty-six cases the eruption was equally well developed upon face and back, and in seven cases it was limited to the back, in some of these latter no lesions, in others not more than two or three, appearing upon the face. In the cases involving the back, either alone or conjointly with the face, the eruption was quite abundant, and commonly extended down as far as the sacral region. The type of the eruption in eight cases was minutely papular, more of the

nature of comedo; in thirty-eight, almost purely pustular, the preceding papular stage being scarcely noticeable; and in one hundred and five cases it was papular or papulo-pustular, the pustular element being comparatively slight. In nine cases the variety known as acne indurata was represented, and in seven cases the type designated atrophic, in which the lesions, usually sluggish, papular, and small, leave behind pit-like scars. The remaining cases were of mixed type.

The most common etiological factor in acne, next to adolescence, was some disturbance of the gastro-intestinal tract. Functional and organic disease of the reproductive organs in females was not infrequently the active predisposing influence. Another etiological element in many of these cases was the fact that the work in which the patients were engaged was of a dusty or dirty character, or done in that kind of an atmosphere.

Constitutional treatment was entirely dependent upon the active etiological factor or factors; experiments with specific remedies were not fruitful of good results. The external treatment consisted first in keeping the skin clean and the ducts free by means of soap-and-water washings, hot-water sponging or steaming, and by pressing out the blackheads with a suitable instrument. Among the most valuable lotions were the following: One containing from twenty to one hundred grains each of zinc sulphate and potassium sulphuret to four ounces of water; a lotion (Kummerfeld's) containing two drachms each of sulphur, mucilage of tragacanth, and spirits of camphor, with enough lime-water to make the four ounces; one containing two drachms of sulphur, a half-ounce of ether, and three and a half ounces of alcohol; Vleminckx's solution, with six to ten parts of water up to the pure solution; a saturated alcoholic solution of boric acid; an aqueous solution of boric acid, with five to twenty grains of zinc sulphate to the ounce; and one containing five to forty grains of resorcin to the ounce. The most valuable ointments were: One of sulphur, thirty to one hundred and twenty grains to the ounce; the same ointment made more stimulating by the addition of one-half to two drachms of sapo viridis; two drachms of sulphur and a drachm of ichthyol to the ounce; one of ichthyol, twenty-to fifty-per-cent. strength; and one of white precipitate, twenty to a hundred grains to the ounce. The mercurials were seldom employed, as the sulphur preparations were by far the more valuable. In addition to the white precipitate ointment mentioned, one of oleate of mercury, five- to twenty-per-cent. strength,

and a lotion of corrosive sublimate, one-half to two grains to the ounce, were sometimes prescribed. In many cases the deep-seated lesions were punctured, the contents pressed out, and the interior then touched with carbolic acid, applied by means of a pointed stick.

Acne Rosacea. - Eighty-six cases of this disease were met with,-thirty-nine males and In forty-two cases the forty-seven females. disease presented itself as a simple hyperæmic condition or a stasis, with or without one or several acne lesions; the seat of this type was the nose, or the nose and the closely-adjacent skin. In other cases-forty-there was more or less hyperæmia, with dilated capillaries, and acne lesions of a markedly inflammatory character; the nose, surrounding parts, and, in a number, the cheeks, forehead, and chin also were the seat of the disease. In two instances there was a diffused hyperæmia, with hypertrophy of the vessels and all the cutaneous tissues. Seventy-six cases were seen between the ages of twenty and sixty; four under the age of twenty, and these usually representing a cold hyperæmia of the nose, associated with an oily seborrhæa. The most common causes seemed to be digestive irregularities, uterine disturbances, and debility; in a proportion, which was not large, drink was an important factor.

Systemic treatment had for its aim a correction or removal of the predisposing causes, salines, antacids, bitter tonics, and digestives playing an important rôle; ergot, more especially in women and in those cases in which some uterine disturbance was the apparent factor, was sometimes of value. The main treatment was external. In those cases of sensitive skin in which the hyperæmic element and inflammatory condition were marked features, the early treatment consisted of mild astringent applications, such as calamine lotions and ointments, tannin lotions and ointments, and boricacid washes with one or more grains of zinc sulphate to the ounce; later, in these cases, and at once in those of a more sluggish or colder type, stimulating applications were made. The most important of these were such as are used in the treatment of ordinary acne. ticular mention should be made of Vleminckx's solution, a compound lotion of zinc sulphate and potassium sulphuret, and ichthyol ointments. Simple multiple punctures, or these combined with electrolysis, were employed in persistent cases, and especially in those in which there was distinct capillary hypertrophy. destroying the enlarged vessels, electrolysis or the bistoury was resorted to; to accomplish this frequent repetitions were necessary.

Seborrhæa.—Of this disease, one hundred and twenty-five cases, or three per cent., were recorded,-sixty-four males and sixty-one females. The type of the disease was in three instances oily, in fifty-four dry, in fifty-one mixed, and in seventeen it was not noted. The part affected was the scalp in sixty-nine patients, the face in thirty-one, the sternal or interscapular region in four patients, the scalp and face in fifteen, and the scalp and breast in six. Falling of the hair was especially complained of in ten cases. It was by far most frequent-fiftysix cases—between the ages of fifteen and thirty. In many instances the patients seemed otherwise in good health. On the other hand, in a large number the seborrhœic condition fluctuated with the patient's well-being.

Resorcin lotions, alcoholic or aqueous, ten to twenty-five grains to the ounce; thymol lotion, one-half to two grains to the ounce; an ointment containing five to thirty grains of salicylic acid and thirty to one hundred grains of sulphur to the ounce; an ointment of white precipitate, twenty to sixty grains to the ounce, with or without ten to twenty grains of salicylic acid; an ointment of oleate of mercury, ten- to twenty-per-cent. strength; and  $\beta$ -naphthol ointment, five to thirty grains to the ounce, proved to be the most valuable applications. constitutional treatment, experience showed that it was not always necessary, and when called for its character depended upon a study of the individual patient's needs.

Sycosis. -- Forty-seven cases-over one per cent.-of this disease were treated. It was seen at all ages, but by far most commonly between twenty and forty, thirty-two of the cases having been met with in this period. The youngest case was eighteen, with the disease upon the chin, of a few weeks' duration; the oldest was seventy-four, with the disease upon the chin and upper lip, of four years' duration. In one instance—a patient, aged thirty-two-the disease had lasted several years, entirely disappearing, however, when the man kept himself shaved, reappearing immediately as soon as the hair was allowed to grow. site of the disease was the upper lip in fourteen cases, in six of which it was immediately under the nose and associated with a catarrhal condition; in ten cases it was confined to the bearded parts of the cheeks; in four cases to the chin and neck; in four to cheeks, chin, and upper lip; in six to chin and cheeks; in four to chin and lip; in two instances to the chin alone; and in three the site was not recorded. Previous duration varied from a few weeks to ten years.

Treatment was almost exclusively local, al-

though in debilitated subjects cod-liver oil was administered with benefit; calx sulphurata may have been of service in a few cases. The important treatment, however, was external. acutely inflammatory cases mild, soothing applications were made until the inflammatory condition became subacute or sluggish, and then in these, as well as in all other cases, stimulating remedies were employed. which proved most successful were: Ointments of sulphur, twenty grains to two drachms to the ounce; oleate of mercury ointment, ten- to twenty-five-per-cent. strength; an ointment of ichthyol, one-half to two drachms to the ounce; a lotion of resorcin, one- to six-per-cent. strength; lotions of corrosive sublimate, onefourth to two grains to the ounce; and Vleminckx's solution, with ten parts of water up to the pure solution. It was usually necessary to change from one remedy to another, more especially from a wash to an ointment, etc. A compound ointment, consisting of one drachm of sulphur, one-half drachm of balsam of Peru, and diachylon ointment to make the ounce, and one containing a drachm of sulphur and a drachm of ichthyol to the ounce, were especially useful in a number of cases. Shaving daily or every second day was insisted. upon, and was an essential part of the treatment; depilation was advised in those cases in which suppuration was a marked feature, this procedure having a controlling influence in preventing destruction of the follicles.

ELECTRICITY IN GYNÆCOLOGY.

A Paper read before the J. M. Da Costa Medical Society.

BY JOHN M. FISHER, M.D.,

Chief of the Department of Diseases of Women in the Jefferson

Medical College Hospital.

OF late years no subject has given rise to so much acrimonious discussion in many of our medical societies, and none has presented so great a variety of conflicting individual experiences and opinions in the columns of the medical press, as that of the therapeutic value of electricity in gynæcological practice. It has alike been vaunted as a panacea for almost all the ailments peculiar to womankind, in the hands of one class of practitioners,—the enthusiastic electricians,—and denounced as an object of responsibility for many of the diseases necessitating major pelvic surgery by another class,—the often over-confident abdominal surgeons.

While it is generally conceded that over-

zealous electricians have frequently allowed their imaginations to run away with their better professional judgment in their claims for the value of this agent, and through some ill-advised practices have done much to invite ridicule and even condemnation of their methods, and while it is a notable fact, on the other hand, that those among the surgeons who see naught in anything but abdominal section have had but little, and many of them no, experience in the use of the battery, sufficient, it is held, has been learned from quite another class of practitioners, so-called fair-minded men who lay claim to an equally large, though more varied, gynæcological experience,-physicians whose conscientiousness of purpose in their endeavors to sift truth from error cannot be questioned, however much they may err in the interpretation of reported facts; men, moreover, who prefer to acknowledge failure rather than consider recovery from an operation alone as identical with "cure," who are ever ready to remove a pus tube, but likewise willing to try anything within the limits of safety that promises to relieve an ovarian neuralgia or arrest a uterine hemorrhage, before resorting to the more heroic procedures of surgery,—we say, sufficient is claimed by practitioners of this class alone to carry conviction to the minds of a large number of the profession that electricity in certain selected cases will reduce fibroids of the uterus in size, that it will relieve pelvic pain. and that as a uterine hæmostatic it occupies a very important place.

In the presence of so much conflicting evidence, however,-positive, negative, and necessarily doubtful,-trustworthy conclusions by the profession as a whole, from a study of the literature on the subject, are practically impossible. This, in connection with the grave charge made by the opponents of this method,—viz., that gynæcological electricians generally are possessed of a certain elasticity of conscience in the making of diagnoses and in the determination of results following treatment that savors of deliberate deception and fraud,—make personal contact with the electricians themselves, their patients, and their methods a necessary requisite both before and during the electrical treatments and for an indefinite time after the last application in any given case has been made, if the exacting demands of the independent, nevertheless scientific, minds now in search after truth for truth's sake upon this allimportant subject are to be satisfied,—important alike to the preservation of the honor of the gynæcological branch of the profession and to the safety of our patients.

Some of you here this evening no doubt recall the clinical lecture upon this subject delivered by me at the Jefferson Hospital about two years ago, an abstract of which appeared in the *Medical and Surgical Reporter* of April 11, 1890, under the title "Galvanism in the Treatment of Diseases of the Uterus." All the cases reviewed at that time had suffered from various forms of uterine disease, and, as indicated, had been subjected to the most approved plans of electrical treatment then in vogue; and while many of them had failed to derive any benefit, others had evidently undergone vast improvement, and some even were apparently cured.

A number of these patients have remained under observation ever since, and now, after a lapse of almost two years, it may be of some interest to note their present condition as compared with that immediately preceding the use of the battery.

"Of six uterine fibroids treated," the report states, "four were more or less hemorrhagic in their tendencies, and in every one of them the intrauterine application of the positive pole proved its hæmostatic properties, immediate and remote. . . . In only two of the cases has there been a positive and indisputable reduction in size." Three of these cases were seen within the past two months.

One—a woman, aged thirty-eight at the time she first came to the clinic—had a large, smoothly-rounded fibroid of the uterus extending to within an inch of the ensiform cartilage. "Between November 1, 1889, and November 21, 1890 (about one year), twenty-nine negative intrauterine applications of galvanism were made, the intensities varying between one hundred and one hundred and fifty milliampères, five minutes." A careful comparison of measurements made both before and at the close of treatment indicated a decrease in size of about one-fourth its original bulk a year previously. The measurements taken eight weeks ago, however, go to show that the tumor within the preceding year and a half had again increased in size, so that at present it by far exceeds its dimensions previous to the use of electricity. All the distressing pressure symptoms from which she suffered at the time have likewise become very much more pronounced.

The second case (clinically reported, but not published) is that of a patient, aged fifty-one, who, at the time she first presented herself for treatment, had multiple fibroids of the uterus, most of them subperitoneal, forming a large nodular mass reaching as high as the umbilicus, the size of which was very much influenced by

her periods, which recurred regularly, the same increasing in dimensions at the approach of the menses and decreasing during the flow, so that at the close of the "period" the tumor had generally diminished in bulk at least onefourth. The size of the same was likewise influenced by the condition of the bowels. Besides the electrical applications, she was placed on a general tonic plan of treatment, with a heaping teaspoonful of Rochelle salts each morning. During the first three or four weeks the mass lessened in bulk very decidedly. The salts were then discontinued, and the size of the tumor again increased. Between November 21, 1889, and November 19, 1890 (one year), thirty negative applications (intrauterine) were made, with intensities ranging between fifty and one hundred and seventy-five milliampères, five minutes, with no material anatomical change. recent examination shows that the tumor has remained stationary. She passed the menopause one year ago, and has since suffered less from the various reflex and pressure symptoms that proved so annoying previously.

. The third case was a single woman, twentyseven years old. She had a fibroid of the posterior uterine wall the size of a small lemon, with a history of painful menorrhagia extending over a period of four years, the flow continuing two and three weeks at a time, with intervals between "periods" of only eight and nine days. "Between June 27 and September 1, 1890, twelve intrauterine positive applications of galvanism were made, with intensities of from fifty to one hundred milliampères, five minutes. . . . The last application excited a certain degree of pelvic inflammation," after which the treatment was discontinued. Since July, 1890, this patient has menstruated regularly, the flow covering periods of eight and nine days, profuse, but not painful. The fibroid has augmented somewhat in size. She has no symptoms indicating permanent disability following the attack of pelvic inflammation, and enjoys excellent health otherwise.

Other cases appearing in the clinical report of April 11, 1890, and still under observation, are as follows:

"November 18, 1889, I was called to see Mrs. S., who gave the following history: Age forty-two; married; one child nineteen years old; no miscarriages. Six years ago she began to suffer with menorrhagia. She continued to grow worse with time, until within the last two years she seldom knew of a day that she was 'well,' the hemorrhages having become almost constant and at times so excessive that she was frequently obliged to resort to the use

of tampons and to take to her bed for weeks She stated that she was conin succession. fined to bed almost half the days of the year because of this trouble. At the time I was first summoned she had been in bed for more than nine weeks, flooding incessantly, save when this was temporarily arrested with tam-Her weakened pulse, sunken eyes, blanched face, and the bloodless appearance of the buccal and vaginal mucous membranes at once told the story. . . . The uterus was found to be enlarged, of a globular form, and freely The anterior lip appeared to be movable. the seat of a small intramural fibroid. uterine cavity measured four inches. Fibroid uterus was diagnosticated. An intrauterine positive galvano-chemical caustic application of fifty milliampères of five minutes' duration was made, with the result of arresting the hemorrhage at once."

Within the subsequent twenty-one days three additional applications of galvanism were made, the intensities of the same being gradually augmented to one hundred milliampères, five minutes. During this time she had the bleeding recur but slightly (November 30), and continue for a period of six days. For five months after the last galvanic treatment she continued to menstruate regularly, the periods covering four and five days. In May, 1890, "she was again seized with hemorrhages. I was out of the city, and the bleeding continued three weeks. On my return I found the patient in bed, blanched from loss of blood. I made a single positive application of galvanism, one hundred milliampères, five minutes, with the result of checking the bleeding within six hours."

Two years and five months have elapsed since then, the patient during all this time enjoying excellent health. Within the past year she has undergone slight discomforts incident to the menopause, but without any excessive hemorrhages. The uterus has been considerably reduced in size.

While admitting that the diagnosis in this case is somewhat doubtful, yet because of its very interesting features clinically we have quoted it somewhat at length. Another point of interest is the kind of intrauterine electrode that was used in the treatment. Bearing in mind the electrolytic action of a strong galvanic current upon living tissues, through which oxygen and acids are liberated and accumulate at the positive pole, and knowing the chemical affinity of the latter for some of the metals, instead of employing platinum, a non-corrodible metal in the presence of acids, we made

use of a copper electrode, a metal that is readily attacked by these agents. In doing this we not only obtained the hæmostatic properties of the current in other respects, but there was superadded the astringency of copper in an active state, owing to the action of the acids upon the electrode to form salts, and thus we have reason to believe another element favorable to arrest hemorrhage was brought to bear on the bleeding uterus.

"Mrs. G., aged twenty-one; married. I removed this woman's uterine appendages fifteen months ago for the cure of a septic salpingitis following a miscarriage. She made a good recovery. Soon afterwards, however, she began to have profuse uterine hemorrhages, recurring at irregular intervals, and continuing from one to three weeks. . . . On May 13, 1800, after she had bled for more than three weeks, a positive intrauterine application of galvanism was made (sixty milliampères, five minutes), with the result of arresting the bleeding within twelve hours." Since then she has had a mere "show" but once, extending over a period of two days, and is now in the enjoyment of excellent health.

"Mrs. H., aged twenty-four; married eight years; four children; one miscarriage nine months ago after six weeks' gestation, to which she attributes her present ailment. Ever since she has had a profuse bloody discharge recurring at intervals of two weeks and less, at times only a few weeks intervening between the attacks, continuing for from several days to four and five weeks at a time. . . . The uterus is retroflexed and movable, the cervix enlarged and highly congested, the uterine canal patulous and measuring three and a half inches."

Between June 16 and August 25, 1890, four applications of galvanism were made (positive intrauterine fifty to seventy-five milliampères, five minutes). Following this treatment she menstruated regularly and without pain, and was relieved of many of the distressing pelvic symptoms from which she had formerly suffered. About four months ago she was delivered of a baby. She is in the enjoyment of excellent general health at present, save that she suffers considerably from backache. The uterus is reduced in size, the canal contracted, but the flexion remains and is now more or less fixed.

"Bessie F., aged nineteen; married one and a half years; never pregnant; regular before marriage, continuing seven days, not painful. Shortly after marriage menstruation began to recur at shorter intervals than usual, until it appeared every two weeks, continuing from seven to ten days; clots were discharged attended with excruciating uterine pains. . . . The uterus was anteflexed and movable, the os the site of a mucoid discharge, the vaginal vault tender to the touch. Just before treatment with the battery was begun she had been bleeding almost continuously for more than a month. September 22 to October 10, 1890 A (eighteen days), four positive intrauterine applications of galvanism were made; the highest intensity administered was sixty milliampères. five minutes. Three days after the second treatment the menses appeared, covering a period of five days, and painless." This patient returned to the clinic about three weeks ago, stating that following the use of electricity she menstruated regularly and without pain for a period of more than a year, after which the dysmenorrhœa gradually returned and has continued in an aggravated form ever since. Menstruation has been regular. She was referred to Professor Montgomery for further treatment.

"Agnes F., aged twenty-seven; single. Menses at seventeen; regular, one and a half days, and scanty. The very inception of the 'flow' was always attended with excruciating uterine pains, every moment contributing to her suffering for from five to six hours, rendering the free use of morphine, or whatever narcotic might be at hand, a necessity. . . . She applied to the clinic October 28, 1889. uterus was in the normal position, movable, and presented cervical endometritis. A week later the cervix was dilated under ether. Four days subsequently the menses appeared, just as painful as ever. January 3, 1890, negative intrauterine galvanism was used (forty-five milliampères, five minutes). Menses came on in three days, and continued for four days, a longer period than ever before, with comparatively little pain." The fourth and last galvanic treatment was given on February 13, 1800, since which time she has menstruated regularly, the "flow" continuing for four days without pain.

"Mrs. G., aged twenty-eight; married two years and a quarter; no children." Suffered from an aggravated type of vaginismus, the mere touch of the vulva with the finger causing a neuromuscular spasm of the vaginal structure, the patient at the same time giving evidence of suffering pain, and evincing general nervous disturbance. "Between September 22 and October 6, 1890, five applications of galvanism were made (vagino-abdominal, fifteen to thirty milliampères, five minutes). After the third application the spasm and pain were entirely relieved, and coitus was satisfactory."

About two weeks ago this patient returned to the clinic, stating that the improvement following the use of the battery had continued for a period of about three months, after which she again began to suffer as formerly, and had thus continued to the present. Superadded to this she now suffers from excruciating uterine pains during menstruation. She was referred to Professor Montgomery for further treatment.

In this connection I desire to report several cases from the records of my private practice.

Miss K., aged forty-four. Always enjoyed good health until January, 1890, at which time menstruation was much prolonged and very profuse. The following month the bleeding returned, and continued to a greater or less extent until May 20, 1891, a period of fourteen months. Patient had lost considerably in flesh in the mean time, and presented evidences of profound anæmia.

Examination disclosed a fibroid of the anterior uterine wall, involving a portion of the cervix; this was of the dimensions of a medium-sized orange. Uterus movable. Os the site of a bloody discharge, uterine cavity measuring two and three-fourths inches. She was placed on a general tonic plan of treatment. Between May 20 and June 6, 1891 (seventeen days), four applications of galvanism, positive intrauterine, were made, intensities one hundred and fifty to one hundred and seventy-five milliampères, five to eight minutes. The first treatment was followed by an arrest of the bleeding within twenty hours. Three days subsequently (no bleeding) a second application was made. Seven days later the same treatment was followed by excessive bleeding, necessitating packing of the vagina. The bleeding continued. The fourth and last application was attended and followed by a gushing hemorrhage, to arrest which I was obliged to pack the uterus and vagina with gauze. Eight days later curettement of the uterus with a sharp instrument was performed, followed by irrigation, and the intrauterine application of Churchill's tincture with the iodoform-gauze pack. Two additional applications of a like character were made subsequently, the last one July 13, 1891, since which time she has had irregular hemorrhages at long intervals, generally slight, at times profuse, but never alarmingly so. She has gained in weight and her general health is good. The fibroid has gradually augmented in size, the cervix being obliterated in the growth, which now almost fills the lower pelvis and is quite perceptible for some distance above the pubis. Of late it has given her decided rectal and vesical distress. The patient would at no time consent to have the tumor removed by section.

Mrs. Q., aged forty-nine; married twenty years; no children. Five years ago she began to have irregular and profuse uterine hemorrhages, often extending over periods of two and three weeks at a time and even longer. Patient is of the neurotic type, and is extremely anæmic.

Examination disclosed a tumor that had evidently developed from the fundus and anterior wall of the uterus, extending to a point midway between the pubis and umbilicus, and encroaching upon pelvic contents so as to give decided rectal and vesical distress and pelvic From its resistance a uterine myoma was diagnosticated. Between December 10 and 22, 1890, four intrauterine negative applications of galvanism were made, one hundred to one hundred and fifty milliampères. days after the last treatment found the patient in bed suffering from a violent attack of pelvic peritonitis, with septic infection, depending upon a profuse, offensive, muddy-looking discharge issuing from the cavity of the uterus. It will suffice to state that the patient was confined to bed for more than three weeks, giving the writer one of the hardest fights for a life that he had experienced for many a day. She ultimately made a good recovery. The tumor, in the mean time, had gone down to less than one-half its original bulk, the hemorrhages did not recur, the patient's general health improved, and now after two years she is in better health than for several years previously. The growth has since increased in size but slowly. No hemorrhages. The tumor originally, no doubt, was of a fibro-cystic character. The destructive process following the use of the electrode having extended, ulcerated into its cavity, with the consequent emptying of its contents.

Mrs. G., aged twenty-seven; married eleven years; three children. Always enjoyed robust health until confined with her first-born seven years ago. Puerperium was complicated by a pelvic inflammatory trouble confining her to bed four weeks. Convalescence tedious, but ultimately made a good recovery. One year subsequently she had a second attack of pelvic peritonitis, the result, she thought, of undue A third attack attended her last exposure. confinement seven months ago, confining her to bed three weeks. Menses reappeared seven weeks later, and recurred every three weeks, continuing four days, profuse and painful. Stated that she had been in delicate health ever since the birth of her first child. At the time

she first came under my care she complained of constant dull, aching pains, with a feeling of weight, bearing down, and soreness in lower abdomen and pelvis, especially pronounced in left inguinal region; aggravated by exercise. Profuse yellowish leucorrhœa; micturition frequent and burning; bowels costive, movements attended with increased pelvic distress; appetite poor; frontal headache; sleeplessness; is easily fatigued.

Examination revealed a right-sided tear of the pelvic floor, with beginning rectocele. The uterus was in the first stage of prolapse, enormously hypertrophied, but freely movable. The cervix was eroded, the os patulous and the seat of a profuse muco-purulent discharge. Bimanually the left vaginal vault disclosed considerable tenderness, but nothing tangibly ab-She was sent to bed, placed upon normal. good diet and a general tonic cathartic plan of treatment, combined with vaginal antiphlogistic measures, consisting of copious hot-water injections, iodine to vault, and later on glyce-In two weeks she was rin wool tampons. directed to take light gymnastics and to spend a portion of her time in the open air. General faradization (no vaginal applications) was practised every second day. After three months' treatment she had undergone vast improve-Her appetite was good, she had gained in weight, slept well, and no longer suffered from the pains in the side, nor from the various pelvic and other symptoms of reflex origin which had rendered life so miserable previously, save the sensations of weight, which returned whenever the uterus was deprived of its now accustomed support. The uterus had undergone but slight changes, save that it was very much less congested than previously and the erosion had disappeared.

With a view to determine the safety of making intrauterine applications of galvanism, bearing in mind the clinical history of the case, I had an eminent gynæcologist of this city (not an electrician) examine the case with me. agreed upon a diagnosis of chronic parenchymatous metritis, depending upon a diseased state of the endometrium, without any extrauterine complications. Encouraged by the glowing accounts of others in the treatment of such conditions, I made a single application of galvanism, negative, intrauterine, fifty milliampères, five minutes. Three days subsequently the patient was taken with violent pains in the left inguinal space. Her suffering grew worse daily. Seven days later abdominal section disclosed a large recent accumulation of pus involving the left Fallopian tube. She

never rallied from the shock of the operation, and died within forty-eight hours.

Here we shall leave the subject without special comment on any one particular case, each of which bears the lesson of its own teaching. It will suffice to say that electricity is an element capable of some good in properly-selected cases, but that it likewise is a most potent agent for evil is, we think, abundantly demonstrated in the foregoing report. Who is to make the selection of cases adapted for electrical treatment? Specialists in this line of practice had better be more modest than heretofore in their claims relating to the making of gynæcological diagnoses. We can say without fear of an attempt, even, at contradiction by any one of the more experienced and successful gynæcological operators of to-day, that no man, however skilful, can be absolutely certain that his diagnosis in a given case, simple as it may appear, represents the whole truth. Almost every abdominal section for disease reveals some complication that was not discovered by external examination, and every operator of any note of our acquaintance readily admits that each case has its own individual pecu-We have heard Dr. Joseph Price admit his inability to make a diagnosis, even after operation, with the diseased specimen in his hands, previous to section. Case after case has been reported in which ectopic gestation has been diagnosticated as hæmatosalpinx, pyosalpinx, and ovarian cystoma. ourselves have been present when men eminent in this line of work have diagnosticated an ectopic gestation, fibroid tumor, a pregnant uterus, extrauterine sarcoma, a retroperitoneal sarcoma, ovarian cystoma, an ovarian cyst, fibroma, and one case we recall in particular in which an interligamentary cyst was said to be an ectopic gestation, an ovarian cyst, and a uterine fibroma. at as many different sittings, and that, too, by the same man, one of our leading gynæcologists.

After a three years' service in the Gynæcological Department of the Jefferson Hospital, and after witnessing what we have at the operating-table, in connection with the sad experience that attended our work in several instances with the electrode, we consider that the difficulties and uncertainties besetting gynæcological diagnosis are a bar to a very large extent to all forms of intrauterine treatment. If, as pointed out, pathological conditions of such gross character are so difficult of proper recognition, how much more difficult is it, in the vast majority of cases, to diagnosticate a catarrhal, or even a suppurative, salpingitis, where the presence of fluid material in the tube is

limited to a few drops of pus or muco-pus, giving rise, in many instances, to but little, if any, distress, yet possessing all the latent\_properties of intense energy if its smouldering embers are but stirred into activity, as they often have been, by an irritant intrauterine application!

Of all the specialties in medicine, none is entitled to a better trained hand and the exercise of a maturer judgment than that of gynæcology. In the present state of our knowledge of pelvic disease, and with the facilities at hand to acquire legitimate diagnostic and operative skill, no man has a right to do anything above the vaginal vault, gynæcologically, especially in our large cities, save when the exigencies of a given case or the circumstances surrounding the same demand it, unless he has first served a well-appointed apprenticeship with some experienced opera-Scores of women are unnecessarily mutilated, and many lives sacrificed, by men of insufficient experience, who have nothing more to guide them in their eagerness to do an abdominal section, or make an intrauterine application of electricity, than a "pain in the side" or a discharge from the cavity of the uterus.

1527 WALLACE STREET.

HOW TO OPERATE FOR HEMORRHOIDS.

A CLINICAL LECTURE ON DISBASES OF THE RECTUM, DELIVERED AT THE NEW YORK POST-GRADUATE HOSPITAL.

By Charles B. Kelsey, M.D.

ENTLEMEN:—I want to show you to-day something of a curiosity. It is simply the largest mass of hemorrhoids I have ever seen or operated upon.

The patient, as you see, is an old man—nearly seventy—and he is a physician. Few men, except physicians, would ever go as long without treatment as he has done, for he has suffered many years. He tells me, also, that his father and his brothers have all suffered in the same way, and that his brother had three operations at intervals.

Well, we shall not operate three times on this man, in spite of his doubts as to whether a single operation will effect a radical cure.

He has asked me whether there is anything hereditary in piles. I do not know. That many members of the same family may be similarly affected is certain. It has been my own experience to operate upon three generations of the same family; but, beyond the almost universal

prevalence of the disease, I have never been able to decide upon any hereditary influence.

And now, as I stretch the sphincters, you see two immense tumors roll out of the anus, one on either side, and so well developed are they that they have become quite distinct from the coats of the rectum proper and are only attached to it by pedicles of mucous membrane and blood-vessels. They have grown larger and larger as time has progressed; they have become more and more like foreign bodies every year; the act of defecation and extension has pulled them away and separated them from their first position, until now they are quite pendulous and pedunculated, and the pedicle, though broad, is very thin and composed of blood-vessels and a little connective tissue, covered over by the normal mucous membrane. The tumors on each side are, as you see, fully as large as large hen's eggs.

A gentleman asked the other day, after seeing the clamp and cautery operation on a case of rather small tumors, what operation we did for the large ones, his idea being that the clamp, though it might be safe enough for small or even moderately large tumors, would not do for cases of any magnitude. This is a good time to answer his question. I have never operated by any method on tumors of this size, but I propose to now upon these with the clamp and cautery, and I am willing, in the presence of you all, to make this a test case. If the cautery fails to control the bleeding, if the man has any accident from hemorrhage, I will in the future practise the operation by the ligature in preference to that by the cautery.

The test is not a fair one. Accidents have occurred by the ligature, and only a short time ago a man nearly bled to death in one of our hospitals after Whitehead's operation; but if this man bleeds we will admit that it was due to a fault of the operation, and will seek a better one.

You perceive that the pedicles here on either side of the rectum are too large to be included in my clamp, even though it is rather longer in the blades than those usually sold. The first step, then, will be to divide one of these tumors into two equal portions with the scissors. I cut boldly into it parallel with the axis of the gut, then take one-half, make a deep groove on the cutaneous aspect of the pedicle with the scissors to hold the clamp, apply the clamp in the groove firmly, amputate the tumor we are dealing with, and thoroughly cauterize the stump. The same is done with the other section, and you see the result,—a stump the length and size of the index-finger on one side of the anus, which has

a firm eschar covering it, and which is perfectly dry. The opposite tumor, about the same size as the first, is treated in the same way: first divided into two portions from apex to pedicle, then each portion separately clamped and cauterized.

Now, you may ask, why do I not tie these pedicles instead of cauterizing them, and I will answer plainly that it is simply to prove to you that in this very unusually severe case the cautery will control the bleeding as safely and as efficiently as the ligature.

The great fear in the minds of the profession regarding this method of operation is the fear of hemorrhage; it is the fear that was in the mind of the student when he asked what operation we did on the big cases. And I simply want to prove to you that no matter how severe the case, the clamp is as safe as the ligature. This I have always held and still hold. It is the basis of the whole question. Given a single exception, a single case in which the cautery, thoroughly applied, fails to control the bleeding from the stump of an amputated pile, no matter what its size, and the operation falls to the ground.

But my contention has always been that if the cautery were as safe as the ligature in this one particular, then it was for other reasons a better operation than that by the ligature, with which it must be compared; better in this, that there is no ligature surrounding a mass of tissue left in the gut, no string tied tightly around a nerve as well as the blood-vessels, and often causing intense pain till it sloughs away. In consequence of this we have less pain, less vesical disturbance, and a more speedy recovery.

Do not understand that I am an opponent of the operation by ligature, for, unless I believed the clamp and cautery a little better, I should always practise it. It is safe and sure and speedy. The patients have some pain, some of them a good deal, but they are radically cured without accident. Allingham says the cautery is at least six times as fatal as the ligature. By the same reasoning it would not be hard to prove that the ligature was at least twelve times as fatal as the clamp. Nothing will lie like figures,—except facts. Allingham can undoubtedly find a thousand cases of the clamp operation in which the mortality shall be six, and oppose them to a thousand cases of the ligature in which the mortality is zero, and with very little trouble I can reverse the figures. The truth seems to me so manifest that I lose patience with this form of argument. Accidents and death may and will follow any operation which is thrown out to the profession at large to be practised. I know one practitioner whose death-rate with the clamp is one hundred per cent., he never having operated but once, and lost his case from primary hemorrhage. I know of deaths from the ligature. I know of bad results from Whitehead's operation. But the operation by the ligature, when properly done, is as safe as any operation can be, and that with the clamp is as safe in correspondingly good hands as that with the ligature.

We all have our favorite methods of doing things. Personally I claim only for the cautery that my patients get well a little quicker and with less trouble and suffering than they do with the ligature, but the moment I am convinced that it is any less safe than the ligature I will abandon it. I attack no other operation. I do not claim any additional safety for the clamp; but, as far as my knowledge of it goes, I am ready to defend it from any attacks on the score of additional risk.

Let us go still further into this question. Here we have two operations equally safe, equally radical, each as satisfactory as any surgical procedure can well be, and by one or the other, as you may prefer, every case of piles may be cured with little suffering or inconvenience to the patient. Have we any others? None, I am sorry to say, as good as these, to my own mind, and yet there are many that may be practised. Take, for example, the operation described by Whitehead, which consists in dissecting off the mucous membrane and submucous connective tissue (the latter at least in part) from the anus upward for about an inch and a half, amputating it by a circular incision, drawing down the stump and suturing it to the margin of the skin. By thus dissecting up and cutting off a cylinder of mucous membrane and hemorrhoids, the whole "pilebearing area" is removed, and a recurrence is thought to be impossible. Much stress is laid upon this impossibility of recurrence, as though the operation were in this respect more radical than those already mentioned; but such I do not think to be the case. Scarcely any operation can be devised less likely to be followed by a recurrence than that of the clamp or the ligature, and the experience of all surgeons will bear out this statement. I have personally never operated twice on the same patient for hemorrhoids, except in two cases, and Allingham, with a still longer experience, says the number of cases in which he has been called upon to operate the second time can be counted on his fingers. One of my cases you saw here, and under ether it was seen that there was no tumor, but merely a vascular area, which sometimes bled after the straining of defecation. Indeed, this charge that the time-honored radical operations for piles which have been relied upon with perfect confidence by surgeons for years were not radical, struck me, at the time Whitehead's operation first came into vogue, as amusing, and I have never been at all inclined to admit that a new procedure was at all in demand for any such reason, though, if it had any other recommendation, I was perfectly willing to adopt it as a substitute. I have never found that it had, and have never, therefore, practised it, though many others have done so and with good results. In this matter I agree with the late Henry B. Sands, who said that the ligature had answered him so well all his life that he had no idea of abandoning it for anything else.

And yet there are objections to Whitehead's operation by excision, as there are to most surgical operations. The objections to this are chiefly two.

When the circular incision, which should be made at the junction of the skin and mucous membrane, is made a little too far outside, a very serious eversion of the mucous membrane is the consequence. The skin, when loosened by the incision, easily retracts. The stump of mucous membrane, when united to it after the amputation, readily slides down and out of the anus, and when firm union between the two has taken place, the natural muco-cutaneous orifice of the bowel is changed into one covered entirely by mucous membrane, which soon becomes raw and ulcerated by exposure. There have been several of these cases in New York. Personally I have been consulted in three, and I have known of others; and all that I have seen or heard of have resulted from operations in different New York hospitals, except one. I add this because it might be thought that such a result could only result from ignorance or carelessness. It may be a fault of the operator and not of the operation, but it seems a fault to which very good operators are liable.

Exactly how to treat such a condition it may be difficult to say. My own idea would be to destroy the everted and adherent mucous membrane (for it is not a prolapse in the ordinary acceptation of that word, but a substitution of mucous membrane for skin) and allow a cicatrix to take its place, trusting to dilatation to prevent stricture of the anus. However, I have never been able to convince one of these patients that they had not had all of the operations for piles they cared to submit to.

The other objection comes from failure to get union by first intention between the skin and the stump of mucous membrane. When the stitches tear out, the membrane slides back into the rectum, and a circular granulating wound more than an inch in breadth results. When this has cicatrized, a very pretty stricture of the anus is the natural consequence. This also I have seen where it was not to be attributed to any fault of the operator.

There are many other ways of removing hemorrhoids besides these three. Crushing is one, but to my mind so poor a one that I have never used it. There are also various methods of excising the tumors and suturing the mucous membrane after the tumors have been cut off, so as to get immediate union. In fact, it requires no great ingenuity to invent some new technique in accomplishing their removal; but as all the operations lead to the same end, and all of them are more elaborate and require more time than either the clamp or the ligature, and have no advantage over them in certainty of result or avoidance of suffering, you see me here still keep to the operation I much prefer. Allingham gives about one minute to the ligature of an ordinary case of piles after he gets to work; the clamp is fully as speedy; both can be done while the patient is in the primary stage of anæsthesia; both are as satisfactory as any operation in surgery. For these reasons I have never given much time or thought to the various more or less elaborate methods of accomplishing the same end as they appear from time to time in the journals.

So much for the radical cure of hemorrhoids. But the average man only wants his hemorrhoids cured when he is suffering pain,—that is, if they are to be cured by an operation. And as the pain of the disease is very intermittent, and, as a general rule, he suffers only a certain amount of annoyance and discomfort from them, it follows that he will seek relief in many ways, and if he does not find it, will carry his piles with him through a long life down to the grave. It is, therefore, a very desirable thing to be able to do something for these patients that shall satisfy them, -something that will stop the bleeding and protrusion and yet shall not be "an operation" that will compel them to be laid up. knife they fear, ether carries with it a great dread, and the ligature is not pleasant to contemplate.

Can we meet this legitimate want on the part of the public? In a measure, yes. We can by several means arrest bleeding. By more serious measures we can reduce the size of the

tumors till they shall no longer protrude at stool. The relief will probably not be permanent; the pain may be considerable; it is, in fact, the old story of cutting off the dog's tail by inches to avoid hurting him; but if the patient prefers that kind of surgery, after it has been explained to him, there are ways of doing it without any special danger, and the practitioner is justified in using them. It is true that only enough of the caudal appendage will probably be removed to make a very unsatisfactory stump in the eyes of the surgeon, but if the patient wishes it done, I hold that, as long as no false promises are made, it is a justifiable concession to his fears and desires.

The best known, but I think not the most desirable, method of accomplishing this is by the injection of carbolic acid into the tumors. With a fine and clean hypodermic syringe inject from 5 to 10 drops of a ten-per-cent. solution of carbolic acid, in a menstruum of equal parts of glycerin and water, into the centre of each hem-When it works nicely there will be a little smarting only at the time and soreness for a few days after, and the foreign substance will set up just sufficient irritation to cause some consolidation around it, and hence decrease in the vascular supply, with decrease in size and in the amount of bleeding. After all of the piles have been injected,—some once, others several times,—the patient will consider himself cured. The tumors will no longer bleed or protrude at stool, and he is very grateful. The relief will probably last three or four years in a favorable case, and then he will return, and you will find a decided change. The tumors now are harder and firmer to the touch, and the skin of the margin of the anus is more involved in them. They are, in fact, covered by muco-cutaneous tissue instead of velvety mucous membrane, and they are much less amenable to a second course of the same treatment than they were to the first.

This is the course of a favorable case, but all cases do not act in this way by any means. The variations from it are manifold.

Some day you will make the usual injection, as you have done dozens of times before, and your patient will suffer great shock. Exactly why it is hard to tell, but he will either faint on the table or will get cold; his pulse will become weak; you will think he is about to faint,—as, indeed, he is,—and you will rush for stimulants. After an hour or so he will probably be able to leave the office and go about his business, but it will be many days before you will cease to wonder what was the matter with him. Finally, you will call it nervous shock, but you will not

be anxious to inject him again. On that score, if your experience is like mine, you need not have any uneasiness. He will not come back. You have lost your patient.

In another case, after the injection, your patient goes out of the office with only the usual smarting and pain; but, instead of subsiding, it goes on increasing, and after a few hours you will get an urgent request to come to him at once. In fact, you may get a telegram, as I once did, saying that the patient is suffering the "torments of the damned." You go with a hypodermic syringe in your pocket, and as soon as you arrive you use it,—this time for morphine, however. After awhile the pain is overcome, but again you don't know what has happened. The man is all right after a day or two, but he never has another injection, and again you have lost your patient.

In another case the history will be as follows: After the usual glowing prognosis of no pain, no interference with business, etc., you make an injection, and tell your patient to come again in a few days. At the end of a week he appears. Perhaps he has been in the house since the last visit, and perhaps he has dragged around at his business, but he has certainly had a good deal of pain. On examination you find quite a deep slough, the size of a silver quarter, covering the point of injection. That particular hemorrhoid, you may be sure, is in a fair way to be cured, and you inject another one. The same result follows, and after four or five weeks of pain and partial disability, if the sloughs heal kindly, the patient is discharged from treatment. He has had rather a hard time, -much harder than either of the radical operations would have caused him; but still he will not again be troubled for some years, and if he is satisfied, perhaps you may be. I have noticed, also, that after three or four years, when these patients come around again to talk about having something done for their piles, they do not take kindly to the idea of a second course of treatment by injections.

Exactly why sloughing will result in one patient with weak solutions, and will not in another, though much stronger solutions are used, it is not easy to say. Such, however, is the clinical fact.

Another class of cases will give you still more trouble. After the first injection, or perhaps not until after the second or third, the patient will go to bed and send for you on account of his pain. You find on examination a painful tumor at the verge of the anus, the size of the end of the thumb, covered partly by skin and partly by tense

cous membrane. This is a marginal abscess. It means much pain and confinement to bed for several days. Then it bursts, generally on the skin, and again on the mucous surface, and a short fistulous track half an inch or an inch in length is left between the two openings. This may heal spontaneously, or may have to be cut. In any event, the patient has carried the treatment as far as he will, and you will get no credit.

In another class of cases you will be surprised at the powerful effect of your remedy, and you will get a partial cure from a single injection, but not much to your gratification.

On the day after the injection the patient will send for you, and you will find not only the pile you injected, but all his piles, inflamed, prolapsed, and strangulated. You will be surprised to find how much more hemorrhoidal disease he has than you supposed when you made your injection. You keep the man in bed, apply poultices and anodynes, give a cathartic to act on the portal circulation, and leave the case to nature. Part of the protrusion will slough off, and when the inflammation has subsided and the protruded mass returned, the patient will be partially cured.

But these are not all the complications. There is a peculiar blind, internal, submucous fistula which often owes its origin to an injection of carbolic acid. The piles may be cured as far as the patient knows, but instead of being well, he has a new symptom,—a sense of discomfort, often of actual pain, in the rectum, back, legs, and urinary organs. He goes from doctor to doctor, and nothing is found, till finally some diagnostician more thorough than the others finds a drop of pus coming out of the mucous membrane, just above the internal sphincter, and a small probe passed into the point from which the pus exudes will follow a submucous fistulous track for an inch or more. The injection did not cause a slough over its point of deposit and allow of the escape of matter in that way, but the pus, when formed, followed the course of the needle and escaped at the point of puncture. The same patient may have two, three, or even more of these fistulæ,—one, in fact, for each injection.

These are the minor accidents and complications of this method of treatment. There are graver ones,—large abscesses, deep and extensive perirectal inflammations resulting in bad fistulæ or dangerous illness, and ending in permanent disability or death. More fatal results have been reported in this country from carbolic-acid injections in the last ten vears than from all of the radical operations

combined. A fatal result I have never seen, but all of the other accidents have happened to me personally, and combined they constitute a perfectly satisfactory reason for your not seeing me use the treatment here. Almost every week you see me operate with the clamp and cautery, and during the three years of this clinic you have never seen a failure to cure and never any complications such as have been described. Therefore I say to you, if you want to cure your patients and sleep comfortably yourself, use one of the radical operations. If you want to try palliative treatment, go very gently. Carbolic acid is only a palliative at best.

Besides carbolic-acid injections, there are several other means of relieving the worst symptoms of hemorrhoids. What is most often complained of is perhaps bleeding, and this can often be controlled for a time with applications of fuming nitric acid. The piles are extruded, wiped free from mucus with a pledget of cotton, and touched freely on the mucous surface with nitric acid on the end of a match. If the acid is kept on the mucous surface there will not be very much pain at the time, though there will be soreness afterwards. Of course a superficial slough is formed, and when this has separated, and cicatricial tissue has taken its place, there will be some decrease in size and a cessation of the bleeding. The relief, however, is but temporary.

One form of hemorrhoid (the nævus-like growth which is flat and very vascular) can be cured by a thorough application of nitric acid. This is the form that bleeds so profusely, and yet does not consist of a tumor with increase of connective tissue, but merely of a circumscribed spot of greatly increased vascularity. In larger tumors, however, only palliation is to be expected. Unless very deep and unjustifiable sloughs are produced, there will be no great diminution in size, and hence no marked amelioration in the protrusion.

Instead of nitric acid the galvano-cautery may be used for the same purpose, and cocaine may also be employed if the patient is very sensitive. As long as the cautery is applied superficially, no great harm will result and temporary good may be done. If the cautery be plunged into the substance of the tumor a number of times, you can effect a cure lasting a number of years, but again you run many of the risks of an injection of carbolic acid,—that is, you are likely to cause suppuration in the tumor and marginal abscess. The danger of diffuse inflammation does not seem to me so great with galvano-puncture as with carbolic-

acid injections. In the one case your irritant can be more definitely limited in its effect than in the other.

These, in addition to the ordinary rules for medical treatment, regulation of the bowels and the action of the liver, avoidance of excess, especially in alcohol, etc., constitute practically our only resources in the palliative treatment of hemorrhoids. You will soon learn that the moment you grow ambitious to cure by these palliative surgical measures, the measures will be found very ill adapted to the My advice to you would be to use your palliatives gently and not to promise much from them; and when you find a patient willing to be radically cured, employ either the clamp or the ligature. In this way you will avoid failure on the one hand and accident on the other. Above all, make your patient understand what you are going to try to do beforehand.

### SIMPLE PHOTOPHOBIA TREATED BY THE CONTINUOUS CURRENT.

DR. JOHN HERN (Ophthalmic Review, February, 1893) describes cases in which the chief symptom is photophobia, without discoverable lesion with the naked eye or by ophthalmoscopic examination. The patients were usually anæmic, of nervous temperament, and in several instances were convalescing from a severe illness. They did not exhibit ordinary hysterical symptoms. He thought the photophobia was due to retinal change, the exact nature of which was undetermined. The treatment he advocated was the application of the continuous electric current, applied in the manner advocated by Buzzard.

This method, described by the author in the "Transactions of the Ophthalmological Society of the United Kingdom," vol. ix. p. 191, was intended for applying electric currents directly in cases of oculo-motor paralysis. It is performed as follows: A moistened plate rheophore is applied to the nape of the patient's neck and connected with one pole of a Leclanché battery. The operator, grasping the other rheophore, well wetted, in his left hand, and securing good contact with the skin of his patient, applies the index-finger of his right hand to the patient's globe in the situation of the various external muscles of his eye. finger is covered with a single thickness of wellmoistened muslin; the conjunctiva should be previously rendered insensitive by cocaine. The strength of the current advised is from one and a half to two milliampères, and the alternate application and lifting of the finger by closing and opening the circuit gives rise to a feeling of a slight electric shock in the terminal joint of the finger. The operator should first test the strength of the current upon the patient's cheek. The point of the finger thus applied acts as a sentient rheophore, and can be applied with nicety and delicacy to various parts of the eye, the operator being constantly aware by feeling in his finger of the strength of the current employed.

### THE MEDICO-ELECTRIC EYE-BATH IN THE TREATMENT OF SCLERITIS AND EPISCLERITIS:

DR. JOSEPH NORSA (Archives of Ophthalmology, January, 1893) uses the following method in the treatment of the diseases mentioned in the title: A two-litre glass vessel, filled with a lukewarm one- to two-per-cent. solution of salicylate of lithium, is placed two metres above the head of the patient. This reservoir communicates, by means of a rubber tube, with an ordinary eye-glass; at the bottom there is a perforation, through which a metal tube is passed. The outer end of this is fastened to the rubber tube; the inner end projects about half a centimetre above the opening of the eye-glass. A small stop-cock placed on the metal pipe serves to connect or disconnect, as desired, with the water reservoir. There is also an opening in the side of the vessel, provided with a stop-cock, in order to let off the water. Then, finally, he requires an electric apparatus, preferably with a galvanometer, for developing a constant current; also a milliampèrometer is desirable in order to regulate the exact strength of the current. One electrode communicating with the metallic plate, properly covered and dampened with salt water, is laid upon the cervical sympathetic, while the other is connected with a small screw on the metal covering of the eyeglass. It is immaterial whether the positive or negative pole is placed on the eye or glass. This can be regulated by the sensitiveness of the patient to the one or the other. The electric bath is applied to each eye for about five minutes, and it is unnecessary to instil cocaine beforehand, as even nervous and feeble patients can bear it easily. This treatment can be repeated every day, as the hyperæmia of the conjunctiva, and especially that of the ball, after this treatment, disappears, at the longest, in two hours. The patient experiences only a mild and easily-borne sticking sensation of short duration.

# The Therapeutic Gazette

EDITED BY
H. A. HARE, M.D.,
GENERAL THERAPEUTICS.

With special departments under the charge of G. E. DE SCHWEINITZ, M.D., OPHTHALMIC AND AURAL THERAPEUTICS,

AND
EDWARD MARTIN, M.D.,
SURGICAL AND GENITO-URINARY THERAPEUTICS.

### GEO. S. DAVIS.

Medical Publisher, Box 470,
DETROIT, MICH.

Philadelphia, 714 Filbert Street,

PERSON, 172 1210011 001000

### SUBSCRIPTION RATES FOR 1893.

THERAPEUTIC	GAZETTE	(pos	tage incl	uded)	\$2.00
THERAPEUTIC	GAZETTE	with	MEDICAL	AGE	2.50
THERAPEUTIC	GAZETTE	with	WESTERN	MEDICAL	
REPORTER.	•••••	• • • • • • •		•••••	2.50
THERAPEUTIC	GAZETTE	with	BULLETIN	OF PHAR-	•

THERAPEUTIC GAZETTE with AMERICAN LANCET 3.25
THERAPEUTIC GAZETTE with Age and LANCET... 4.00

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136 Gower Street, London. Price 10s. Remittances may be made either by Postal Order or Stamps.

Price to Foreign Subscribers direct (postage included), \$2.50 (20 shillings). English postage-stamps received on remittances.

Editorial communications should be addressed 222 South Fifteenth Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

Authors will receive reprints in pamphlet form, without charge, provided the request for them be written on the articles sent.

Business communications should be addressed to the Publishers.

### Leading Articles.

THE INFLUENCE OF SOME OF THE NEW ANALGESICS IN INCREASING THE SUSCEPTIBILITY TO COLD.

WHILE it is true that antipyrin, acetanilide, and similar compounds were first introduced into medicine for the purpose of reducing fever temperatures, it has never been generally recognized by experimental or practical therapeutists that they are capable of reducing the normal bodily temperature to any extent, and for this reason many physicians have administered these remedies, since they have been employed so largely for the relief of pain, with little regard to the question of exposure of the patient to cold. We believe that it is important that this influence of these analgesics should be more widely recognized.

While it is true that they do not reduce nor-

mal bodily temperature, it must be remembered that both scientific and practical research has proved them capable of decreasing the production of animal heat, and we can therefore readily understand that their administration to a person who is about to be exposed to cold might readily result in his suffering from what we ordinarily call a "cold," by reason of the fact that his heat-centres fail, under the influence of the drug, to manufacture the increased amount of heat required by the body, owing to For this reason careful questhe exposure. tioning will nearly always develop the fact that the patients exposed to cold after taking these drugs suffer from a considerable degree of chilliness, and, if they catch "cold" readily, develop more or less severe congestion of localized areas, which may pass away in a few hours, or develop into acute attacks of coryza, laryngitis, bronchitis, or even pneumonia.

It is probable, too, that these drugs not only cause the patient to take cold by reason of their influence over the nervous mechanism governing the production of heat in our bodies, but also that their influence over the vaso-motor system aids in producing this re-Not that the drugs necessarily produce vaso-motor depression, but rather that in their action they render the vaso-motor system less active in adjusting itself to the circumstances with which it is surrounded. Thus the function of the normal vascular system, when the exterior of the individual is exposed to cold, is to cause peripheral vaso-motor contraction, with resulting internal congestion. vents the patient from becoming chilled, and allows the blood to remain in the warm, wellprotected portions of the body. If this does not take place, the blood in the peripheral capillaries becomes chilled, and general chilling of the surface occurs, so that the actual amount of heat in the body is decreased with more or less disastrous results. As we have said before. we believe that the employment of these antipyretic and analgesic drugs for the relief of various forms of pain markedly increases the susceptibility of patients who may be exposed to cold.

### THE TREATMENT OF CARDIAC DISEASE.

IN the last number of the THERAPEUTIC GAZETTE we published a leading article upon the subject of "Aconite in Cardiac Disease." In this number we are glad to be able to present our readers with a valuable practical paper by Dr. Tyson upon this subject.

It would seem that in no other condition affecting mankind is there a greater need for the reiteration of facts governing the therapeutics of disease than is afforded by these disorders under discussion. Practically the cardinal point to be remembered is that cardiac disorders are to be divided into the classes of functional and organic, and that the organic disorders never require medication unless there is insufficient or too great hypertrophy of the cardiac muscle. In other words, the question of compensation must govern the physician in his treatment of a case more than the loudness of a murmur which he hears, or the distinctness of any præcordial thrill which he may recognize by palpation. It is true that digitalis very justly has come to be regarded as the sheetanchor of cardiac therapeutics; but for this very reason it is often given when it is not indicated, and is perhaps as much abused as it is used properly. Every practitioner who has had large experience in the treatment of cardiac disease will have long since met with the unfortunate discovery that digitalis will not do everything for a case of cardiac trouble, or perhaps that its administration very distinctly increases the sufferings of an individual patient, or again that, after he has obtained valuable service from this drug for a sufficient length of time to give both himself and the patient great confidence in its efficiency, it more or less suddenly loses its power for good, and the physician finds himself at his wits' end to discover something which will take its place. It is under these circumstances that he begins to appreciate the value of other cardiac medicaments, much less valuable for the majority of cases, but more valuable in individual instances.

Probably the first drug to which he will turn will be strophanthus, which Dr. Tyson has spoken of so favorably. There are, however, two effects produced by strophanthus in susceptible persons which may prevent the physician from employing it as freely or for as long a time as the cardiac signs warrant,—namely, the development of some gastric irritability, or, on the other hand, an active diarrhœa, which requires brisk remedies to control it, and which speedily becomes difficult of control if the physician, not recognizing its cause, persists in the employment of the strophanthus. We confess that, in so far as sparteine is concerned, we have not obtained the favorable results which have been recorded by many European clinicians; partly, perhaps, because we have not given it a sufficient trial, or more probably, because we have only administered it in those very difficult cases where digitalis has failed, and therefore cannot be said to have given it a fair chance. It would seem that, if any good results are to be obtained from sparteine, we should use the sulphate, in doses of I to 2 grains, given as frequently as two to three hours. The administration of the drug, therefore, is entirely different from that of digitalis, which is given at longer intervals because of its well-known prolonged effects. Six years ago the glucoside of Adonis vernalis-adonidinereceived high praise from Botkin in Russia and from Continental clinicians, while attention was attracted to it in this country by a paper by I. C. Wilson. The dose of adonidine, it will be remembered, is from 1/8 to 1/4 grain three or four times a day. It is not a remedy which always proves itself of value, but is nevertheless one which is to be remembered when the more popular drugs fail to bring about good results.

We are confident that in many cases of cardiac disorder, particularly if it is associated with renal disease, the physician fails to pay sufficient attention to the condition of the vaso-motor system. Renal disease, as is well known, rapidly produces disordered function in this part of the circulatory apparatus, and we are apt to ignore the important physiological fact that an intact vaso-motor system is quite as important for the proper action of the heart, and the carrying on of nutrition, as is an intact cardiac mechanism. Although we are taught in the text-books—and physiological research endorses this teaching—that digitalis is a powerful vaso-motor stimulant, it frequently occurs in practical medicine that in the human being this drug exercises its greatest influence upon the cardiac muscle, causing it to send out large waves of blood with considerable force into a vaso-motor system, which is relaxed by disease and which has not been correspondingly stimulated by the digitalis. Under these circumstances the combination of belladonna or atropine with the digitalis in sufficient quantity to exercise vaso-motor stimulation without producing drying of the mucous membranes of the throat or disturbance of the pupillary reaction, will frequently render the administration of digitalis successful when, under other circumstances, it would fail.

# THE TREATMENT OF TETANUS BY MEANS OF IMMUNIZED BLOOD-SERUM.

IT is now generally accepted that tetanus is an infectious disease due to the action on the body of certain poisons produced by the tetanus bacillus. Positive evidence as to the

microbian nature of the affection has been presented by Kittasato, who isolated the specific bacillus from the pus of a tetanic patient, and produced the same disease by inoculations of pure cultures.

Behring, experimenting in the same line, showed that animals may be immunized against tetanus infection, and that the serum of such animals, if injected into the tissues of other animals, prevents the development of tetanus in them, and even cures this disease after symptoms have become well developed. Even when this blood-serum from immunized animals is brought into contact with the tetanus bacillus outside the body, the toxic properties of the latter are completely destroyed. Following the therapeutic indications offered by this line of experiment, an attempt was made to cure by means of serum injections a baby aged nine days, who was attacked in its eighth day by trismus neonatorum. Six injections, each containing 11/2 minims of the serum of the rabbit immunized against tetanus were made. This treatment had no marked beneficial effect.

An important fact brought out by Behring's later experiments is, that for the purpose of securing immunity a large quantity of serum is required, and that this quantity bears a certain ratio to the body-weight of the animal immunized. He also discovered that the curative power of the blood of the immunized animal increases in direct proportion to the time the animal has been rendered proof against Thus, while one gramme of serum from an animal immunized but a few weeks would not protect an animal weighing more than 100 grammes, after a course of many weeks, or months, serum from the same immunized animal would protect from tetanus any animal weighing 500 or even 1000 grammes.

In the course of a year Behring has succeeded in obtaining, from the horse, serum which has an immunizing power of 1 to 5,000,000, so that I gramme of such blood would immunize five thousand animals, each weighing 1000 grammes. This applies, however, to animals not yet inoculated with the minimum fatal dose of tetanus. When the serum is used for the purpose of curing the disease which is already well developed, a much larger quantity must be employed; certainly no less than one-thousandth part of the body-weight of the animal to be cured. Thus, in the case of a man weighing one hundred and fifty pounds, at least one and a half of the serum will be required, and even then good results could only be expected in the early stage of the disease and where it is not of the most acute type. In the acute cases the

dose to be employed would necessarily be much larger. As to the exact quantities to be employed in such circumstances, and as to the expectation of cure, experience alone can show. Though the facts above detailed have been known sufficiently long to have allowed of a thorough clinical trial of the method, a review of current literature shows that this has not yet been made.

Rotter reports one case successfully treated by full injections of Behring's serum. The patient, a hostler, suffered from a lacerated wound of the left hand, which was treated according to antiseptic principles. Eight days later the left arm became somewhat stiff, and seven days after this-that is, fifteen days after the time the wound was inflicted-trismus, difficulty in swallowing, stiffness of the neck, and general disturbance of health followed. following day the symptoms were more marked, the typical features of tetanus being well presented. On the sixteenth day 66 grammes of immunized horse-blood, to which was added a half-per-cent. solution of carbolic acid, were injected beneath the skin of the back. The next day 50 grammes of horse-blood were injected into the region of the pectoralis major. following day 45 grammes were injected. the next two days 50 grammes a day were employed. A little over a week after this the patient was practically well, although there was persistence of tonic local contractures.

This case shows at least that the injection of a large quantity of immunized blood-serum in this case—250 grammes, or a little over one-half of a pint—was quite harmless.

The first injections during the time when reflex excitability was very marked were painful. The subsequent ones did not occasion any inconvenience. Strict cleanliness was observed in the method of obtaining serum and during its injection.

The report of a single case, of course, proves little, yet it is interesting to note what the chance of such a patient surviving without treatment would have been. The incubation period was in this case eight days; from this time the disease steadily progressed for fourteen days, when the injections were begun. For two days the symptoms were unaltered; they then gradually disappeared.

The prognosis of tetanus depends upon the length of the period of incubation and upon the rapidity with which symptoms develop. The shorter the time between infection and the manifestation of the disease the more unfavorable is the case.

Richter, in an analysis of two hundred and

twenty-four cases, found that of twenty-five cases in which the disease developed between the first and fifth day after the wound, only one was cured, or four per cent. Of ninety-one cases with an incubation of six to ten days, 4.4 per cent. were cured. Of the cases with an incubation of longer than ten days, an average of about twenty-five per cent. were cured. In applying these figures to the case just described, it is evident that, since the incubation period was less than ten days, the patient's chances of recovery were perhaps about one in twenty.

The development of this particular case, however, did not necessarily point to a fatal termination. Thus, a clinical study of the disease shows that, aside from the incubation period, if in the course of one or two days after the first symptoms the muscles of the whole body, with the exception of the arms, are involved in strong tetanic spasms, death almost invariably follows. Some perish in the first few days; in some the acute stage passes to a chronic condition, finally resulting in death; very exceptionally, symptoms gradually become less marked and the patient recovers. In the mild form of tetanus,—that is, where the symptoms come on very gradually, often with a prodromal period of several days,—a favorable result is by no means uncommon. The lightest of all cases are those in which the only symptoms are moderate trismus and some stiffness of the neck. These cases usually recover. In general, according to Richter, the prognosis of traumatic tetanus is extremely bad. Thus, of 717 cases, 631, or eighty-eight per cent., died. Of the 40 cases where recovery ensued, 13 suffered from the localized form of the disease.

Although Rotter's case is not conclusive, it will require very few added cases to enable the clinician to arrive at a clear judgment as to the value of Behring's injection treatment. It must, however, not be expected that injections undertaken a few hours before death, or, in severe cases, used in insufficient quantities, will be followed by a cure.

Eight cases of traumatic tetanus, cured by injection after the method of Tizzoni-Catani, have been reported by Italian surgeons. Tizzoni, stimulated by Behring's researches, extracted from a dog immunized against tetanus, an alcoholic precipitate, which he injected in the form of a watery solution into the tissues of his patients. Of the eight cases treated by this method, in all but one the incubation period was ten days or over. Injections were begun at the earliest on the twelfth day of infection, the latest on the twenty-eighth day. In

one case where the incubation was eight days, the disease developed in a very light form. In not a single' case was the tetanus of the acute progressive type, although abundant time was allowed in all for such a form of the disease to develop before treatment was inaugurated. As to the effect of the injections, the improvement was immediate in four cases, but did not appear in six to twelve days in the remaining four.

Rotter, in reviewing the results of Tizzoni's injection, states that in not a single instance can it be proved that this treatment was responsible for the cure, since none of the cases belonged to the class in which death is the almost invariable rule. In considering the element of chance, it is interesting to note that Socin saved nine of twelve cases of tetanus observed by him, though four were of the most acute type. Socin's treatment did not differ from that generally obtaining in his day, and he attributed his low mortality in these cases to There is no reference in the good fortune. Italian publication to cases in which injections were unsuccessful, though there is every reason to believe that when the disease is well advanced and is of a fulminant type, it is beyond all hope of cure; hence the thought is suggested that a complete report, including all the results, has not yet been given out.

If the published reports of laboratory work are to be accepted, it seems clear that it is possible to immunize animals against the tetanus bacillus without affecting their general health, and that by means of injections of the serum of such immunized subjects, animals suffering from well-developed tetanus can be cured. Since tetanus is to-day an exceedingly rare disease in the human, there will probably never be a question as to an attempt towards immunizing healthy men. The treatment of the developed disease is, however, not so successful in its outcome that we can afford to reject the lessons taught by results obtained in the experimental laboratory. Probably the most popular and most successful treatment of tetanus, and that taught by Wood and Hare, consists in keeping the patient at rest in a darkened room, providing food and stimulants, and quieting the spasms by full doses of bromides,—i.e., 30 to 60 grains every two hours,-while chloral is administered at night to induce sleep. This treatment is unavailing in acute traumatic cases; hence the eagerness with which the scientific world is awaiting the clinical results of the laboratory methods applied to the human. is now months-indeed, years-since a new therapeutic system, based upon antitoxines, immunized serum, etc., was heralded; the new era seems close upon us, but it is slow to dawn. Even Pasteur's injections against rabies are regarded with increasing distrust. The clinical evidence in favor of the new treatment of tetanus is not yet so convincing as to force us to admit its superiority to established methods of treatment. Of ten reported cases, one—not treated with sufficiently large doses of serum—perished. The remaining nine all belonged to the class of cases in which spontaneous recovery is by no means exceptional.

At most it can be claimed that the injection method did not in itself do harm, and that an unusually large percentage of the few patients thus treated recovered. We believe it is impossible to obtain either Tizzoni's antitoxine or Behring's immunized hare serum in this country, hence we shall have to look to European surgeons for the data upon which will thrive or perish this latest and most promising herald of the therapeutic system which promises so much and which has done so little.

### VOLTAIC ALTERNATIVES IN OPTIC-NERVE ATROPHY.

THE treatment of cases of atrophy of the optic nerve, independently of those which depend upon some condition amenable to ordinary medicinal agents, and seen before the atrophic process is far advanced, has not a brilliant record of cures to its credit. that an interrupted galvanic current passed through an eye which is practically blind, but in which the perception of light is not lost, gives rise to a sensation of light, suggested the possibility that electrical stimulation might be productive of good results in atrophy of the optic nerve. Practically, every text-book, in the section devoted to the management of diseases of the optic nerve, advises in general terms the trial of galvanism if atrophy is present, although the statements in regard to its exact value under these circumstances are exceedingly contradictory.

Leber, writing in 1877, refers to the use of the constant current, with which, as he says, many observers have secured improvement or have checked the atrophic process. He expresses regret that definite rules are not at hand which shall govern the manner of applying the electrical application. Erb, in his well-known book on electro-therapeutics, after quoting a number of cases with more or less favorable results, states that they prove that the galvanic current possesses a considerable

curative power in otherwise hopeless diseases of the optic nerve, which are manifested in the form of the so-called white atrophy, and quotes the conclusions of Dor, that forty per cent. of the cases may be "really and notably improved." He gives definite directions as to the manner of application, advising "the transverse passage of the current through the temples, with a variable direction of the current, in order to reach the optic nerve within the orbit; then longitudinal conduction from the neck to the closed lids (when neuritis predominates, the An chiefly on the eye, the Ca for a short time and stabile; after atrophy has occurred, the Ca chiefly on the eye, after the application of the An, stabile and moderately labile). Finally, galvanism of the sympathetic according to the ordinary methods."

In contrast to this, and, indeed, in contrast to a good many of the half-hearted statements in text-books, is the assertion of Noyes that "electricity has failed to vindicate its pretensions to any real value, although, by its capacity for exciting phosphenes, it fosters the hopes of a credulous incurable."

• If the literature of the subject, which is considerable in amount, were gathered together and analyzed, many reports would be found asserting very positively that benefit has accrued to patients with optic-nerve atrophy by the use of the constant current, and a goodly number would also appear which relate precisely the opposite experience. Most surgeons must have treated cases of atrophy of the optic nerve with galvanism, or, at least, with electricity in some form or other, in which they have been led to believe that even if there was no actual improvement, at least the field of vision widened out and for a time the degenerative process appeared to be checked. Hence it is with a good deal of interest we refer to a recent paper by Dr. Charles Eugene Riggs, read before the American Electro-Therapeutic Association at its second annual meeting in October, 1892, and published in the Journal of the American Medical Association, March 4, 1893, calling attention to the value of voltaic alternatives in atrophy of the optic nerve,-a method of treatment which, the author states, he has learned from Dr. Webster Fox,-and recording several cases with marked improvement in vision by the use of this method. order to show why the reversal of the polarity of the electrodes is more energetic than simple closures, and at the same time to explain the physiological action of the remedy, Dr. Riggs quotes De Watteville as follows: "When the electrode on the nerve is alternately changed

from anode to cathode, and from cathode to anode, a series of closure excitations are given. which fall alternately in the polar (when the electrode becomes cathodic) and the peripolar (when the electrode becomes anodic) region respectively. Now, in every case the excited region had just before been under anodic influence, and physiology teaches us, as we shall presently demonstrate on the human nerve, that the instant the polarizing current ceases to flow the anodic region passes into a state of increased excitability. This augmentation is the more marked the longer the anodic influence has We see, therefore, how it is that vollasted. taic alternatives act more powerfully than simple closures of the circuit, and that their action is intensified by previous current duration. We understand also why rapid reversals are the more effectual; for the positive modification after an electro-tonus diminishes rapidly after the circuit has been broken; the longer the interval which elapses between the polar change of the electrode the less the hyperexcitability of the nerve will be, until it has returned to its normal state."

With the great improvement in electrical apparatus, with the exact means of measuring the strengths of currents, and with the definite rules for the use of galvanism which have been formulated in recent times, Leber's regret, expressed many years ago, that the method of applying this medicinal agent is not properly described, no longer obtains. It remains to be proved, however, whether any real and lasting benefit occurs. True, there are plenty of cases on record in which it is stated that vision, both peripheral and direct, has been much benefited, even, as Dor reported, in so many as forty and fifty per cent. of the cases. On the other hand are the numerous observations of exceedingly competent observers, who say with Gowers, "I have tried it in many cases, but without results which could reasonably be ascribed to the treatment." In answer to this it may be urged that the treatment was not properly applied; that, for instance, the full physiological effect of electricity was not obtained as it may be by voltaic alternatives. Therefore, as Dr. Riggs suggests, those who have opportunities of observing numbers of cases of optic-nerve atrophy should give the method a fair and thorough trial, and should put new cases upon record, or report those that they have already observed treated in this manner.

It is evident, however, that these reports should not be made without the most exact measurement of vision, direct and indirect, before, during, and after the treatment, and

that they should not be reported until a sufficient length of time has elapsed to demonstrate that the improvement has been a permanent Otherwise false hopes may be raised similar to those occasionally engendered by the temporary alleviation with hypodermic injections of strychnine, to be succeeded by a depression all the greater when the remedy suddenly loses its effect, the vision steadily sinks, and the field of vision as steadily contracts; or like those which have arisen on account of surprising temporary improvements in certain types of chronic choroiditis and iridochoroiditis under the influence of subconjunctival injections of the bichloride of mercury, to be followed by a return to the old state of affairs, or to one even more unfortunate.

Another point of importance in the reporting of cases is, as far as possible, to state exactly the character of the optic-nerve atrophy which is under treatment, and also, if possible, the precise cause of the malady. This deficiency is notable in many of the records, sometimes, no doubt, because it is practically impossible to supply these points, and sometimes because the reporter has been satisfied, as in one list, to call them "exquisite examples of optic-nerve atrophy." One thing is sure, that Dr. Riggs's hope that workers in this line will lay before the profession the results of their experience should be realized, and that the relation of galvanism to the treatment of atrophy of the optic nerve should be more certainly settled than is possible from a perusal of the literature at the present time.

### Reports on Therapeutic Progress.

#### KATAPHORESIS.

At the recent meeting of the Electro-Therapeutic Association the subject of kataphoresis was introduced by Professor J. Houston. He said that by the term kataphoresis is meant the introduction of drugs or medicaments into the body by means of an electric current, and this is dependent upon electric osmose, or electrical endosmose, as it is more commonly called. Kataphoresis is simply a variety of osmose, and by the term osmose is meant the unequal diffusion or admixture of liquids of different density through the pores of a diaphragm, separating the liquids from each other. Each liquid tends to mix with the other, but the flow is unequal in strength, and hence there is a higher level produced in that liquid towards which the

The endosmotic curgreater flow is directed. rent is that current which is directed towards the higher level; the other is called the exosmotic current. The phenomena of osmosis are intimately associated with those of diffusion. Ordinary osmose appears to be unquestionably accompanied by an electric current which is passed through the two liquids across a porous wall which separates them; the movement of the liquid takes place in the direction of the current, and therefore the electro-endosmotic current is the one which passes through the septum in the same direction as the electric current. By a similar process, called kataphoresis, fluids may be made to pass through the skin or other membrane of the human body by the action of the electric current. As the causes of osmosis are not well understood, and our knowledge of the causes of electroosmosis is still more limited, a study of the phenomena of kataphoresis from the standpoint of the physicist must fail, unless supplemented by the studies of the physiologist and the practising physician. The following are the author's conclusions:

- 1. That the effects of electro-endosmose, or kataphoresis, are more general than heretofore suspected. Thus, whenever an electric current is sent through the human body, whether for ordinary therapeutics or for some definite kataphoric effect, there must be a true kataphoresis, for there must be produced a flow of the fluids in the body in the direction of the current. It follows, therefore, that the effect of the passage of a current must be to engorge certain parts and to deplete others, and it is possible that the therapeutic value of the current may arise mainly from such action. beneficial effect may, however, also be dependent upon the establishment of a more uniform condition of pressure in the various tissues, or on the transference of morbid products. probably explains why in so many cases one electrode only is active.
- 2. Since kataphoric action presumably accompanies the passage of an electric current through the human body, the resistance of the various parts of the body cannot remain uniform, even while their resistance is being measured,—a condition very different from that of ordinary conductors. Any change in resistance, due to kataphoric action, should be symmetrical.
- 3. There are two varieties of kataphoresis,—
  (1) normal kataphoresis, by means of which a disturbance is effected in the distribution of the constituents of the human body by the passage of any electrical current; and (2) ab-

normal kataphoresis, by which fluids are introduced into the human body from without by the passage of an electric current.

"Its Uses in General Medicine," by Dr. W. H. Morton, of New York.

Dr. Morton said that he had been in the habit of excluding chemical osmosis from the phenomena of kataphoresis, for the reason that osmosis may exist without kataphoresis, and one may even antagonize the other. There has been much confusion concerning the direction of the flow connected with kataphoresis, for solid particles, when suspended in a fluid, pass from the positive to the negative, or may pass from the negative to the positive pole. Again. methyl blue goes from positive to negative pole, and eosin from negative to positive. Such facts show that to a certain extent the term "anodal diffusion" is a misnomer. Regarding this subject, however, three broad statements may be made, which are well sustained by various observations. They are.-(1) in a fluid or semi-fluid conductor, like the human tissues, there is a movement of the fluids from the positive to the negative pole: (2) extraneous fluids, maintained in contact with the skin or mucous membrane, are transported from the positive towards the negative pole, and in this manner medicinal substances may be made to penetrate the skin and enter the tissues and the circulation; (3) it has been demonstrated with tolerable certainty that medicinal substances in the tissues in a state of solution may be removed by the action of the electric current. This knowledge justifies two distinct divisions of the subject,—(1) kataphoresis, or simply fluid transportation; and (2) kataphoric medication and demedication. difficult at present to say which will be the more useful in therapeutics.

The author then described a number of interesting experiments on animals which had been made by G. M. Stewart, of the physiological laboratory of Owens College, Manchester, England, and by Newman and Harries, The gynæcologists have used of London. currents of such density that the so-called hæmostatic or drying effect of the positive pole may well be due to the removal of fluids, and the liquefying effect of the negative pole to kataphoresis. The dense currents employed in the treatment of fibroid tumors produce contraction of the uterus and diminution of its vascular supply of the tumors, with a loss of its The removal of the salts is the most important element in this treatment.

Regarding kataphoric medication, the author said he had often applied to the body an elec-

trode moistened with a solution of iodide of potassium, and subsequently detected the presence of iodine by an examination of the urine. He had also been able by the same action of the electric current to drive particles of graphite so deeply into the hair-follicles that they would remain there for weeks. The objection to this method of medication is that the dose cannot be determined with accuracy. Dr. Peterson's method, which is the best yet devised, measured accurately the dose applied, but not the actual amount introduced into the system by the flow of the current. In this connection it must not be forgotten that if we admit electrolysis as an element of kataphoresis, it is quite possible that medicines, when introduced in this way in their nascent state, may have special efficacy.

There are two systems of introduction,— (1) by the ordinary electrode and (2) by electric baths. The writer published in the New York Medical Journal for April 25, 1891, an account of a method of introducing lithium salts into rheumatic joints by a method'which is termed "anæmic kataphoresis,"—a method of treatment which since then had continued to yield most satisfactory results. Owing to the present confused state of electro-physics, it has been his custom to apply the dissolved medicine to both electrodes. Also, with the aid of that special form of the static current, which the author had previously described under the name of "the static current," he had been able to produce a kataphoric anæsthesia, and to introduce into the body a great variety of medicinal substances. He also described an interesting experiment which he had made with the static machine to illustrate the transporting action of the current. If glycerin be placed on the positive pole, and the two poles brought about half an inch apart, on setting the machine in operation the glycerin will be seen to travel across from one pole to the other. This transference of the glycerin will not occur if the glycerin be placed on the negative pole.

The efficacy of electric baths has long been a much-mooted point. Owing to their very general adoption by quacks there has arisen a very decided prejudice against them. Nevertheless, the experiments of Mr. Edison, Mr. Kennelly, and other scientific observers of repute prove beyond a doubt that medicines can be introduced in this way through the unbroken tissues of the body. Austrian and German observers have introduced corrosive sublimate in this way, and have been able to find notable quantities of mercury in the urine for

several days afterwards. Demedication is not ordinarily called for, since it is probable that the natural methods of elimination are usually all-sufficient, but it has proved useful in the treatment of ulcers from which electro-platers sometimes suffer.

In conclusion, the author said that while admitting the foregoing statements to be facts, we are not yet in a position to give a judicial expression as to the value of these methods of treatment.

"Its Use in General Surgery," by W. H. WALLING, of Philadelphia. (Read by title.)

"Its Use in Gynæcology," by Dr. Augustin H. Goelet, of New York.

DR. GOELET said that he considered kataphoric medication had had only a very limited sphere of usefulness in gynæcology. He had experimented at one time with the positive pole in the vagina, moistened with solutions of morphine and cocaine, and had obtained fairly good results, but he had been led to abandon this line of investigation on account of the superior effects obtained with the faradic current in the way of relieving pain. novel method of employing kataphoresis consists in moulding plaster of Paris around a platinum wire, and saturating the plaster with the drug which it is desired to introduce. present he only employed kataphoresis for the purpose of producing anæsthesia of the vaginal surface previous to making punctures. This is readily done by moistening the electrode with a four- or eight-per-cent. solution of cocaine, and employing a current of ten or fifteen milliampères. It not only renders the puncture painless, but materially lessens the subsequent aching.

"Its Uses in Nervous Diseases," by Dr. Frederick Peterson, of New York.

Dr. Peterson said that after vainly endeavoring in various ways to control the pain of severe supra-orbital neuralgias, he had found that the application of a galvanic current, with the anode moistened with a ten- or twenty-percent. solution of cocaine, gave absolute relief for a period of from four to ten hours, and without producing any constitutional effects. this kataphoric anæst! esia does not seem to mitigate neuralgias having their origin far back of the seat of pain, it is probable, as Dr. M. A. Starr has suggested, that this method also possesses some diagnostic value. He had experimented with a great many other substances, but had found cocaine most suitable for producing anæsthesia. Chloroform produced a dermatitis, and helleborin, although producing deep anæsthesia, also causes much smarting.

#### GENERAL DISCUSSION.

Dr. Massey said that he had found kataphoric anæsthesia of service, chiefly in very superficial conditions, and therefore it had but a very limited field of usefulness in gynæcology. The objection to this method of treating enlarged glands in the neck with iodide of potassium is, that a strong current cannot be used, on account of the great irritation of the skin which it produces. Under this treatment he had found that tumors would be considerably swollen for some days after the application. He had, therefore, employed his favorite soap electrode with a current of sixty milliampères, and after persevering in this treatment about one month, he found the glands had diminished. He had also found the method of electric elimination very useful on one occasion, when, during the removal of hairs from the face by electricity, he accidentally connected the iron needle which he was using with the positive pole, this producing an iron stain. By reversing the current the stain was quickly removed by the metal being redeposited on the

DR. W. F. HUTCHINSON said that, with the exception of a very few observers, notably Drs. Peterson and Morton, most of the members had accomplished very little with electro-kataphoresis, and he thought this was due chiefly to our confused knowledge of the physical laws governing its action.

DR. F. VON RAITZ, of New York, said that many good observers differed widely in their statements on this subject, some claiming only anodal diffusion, others only cathodal diffusion, while still others believed that it occurs at both poles. In the paper which he read before the Association a year ago he had called attention to the fact that certain substances have an affinity for one pole and certain others for the other pole, and hence the varying degrees of diffusion from the poles.

DR. R. J. Nunn said that he had made some experiments regarding mercurial demedication, and had failed to confirm Vergne's experiments and claims. In his experiments in kataphoresis, he, too, had employed the solution on both poles, because he thought it might produce a better diffusion in the tissues, and he believed he had seen benefit from it. He did not favor the use of an iron needle for the removal of hairs; a gold one was much more delicate, and would last for many years.

DR. E. L. H. McGINNIS, of New York, said that his experience with kataphoresis was limited to a few cases, and in these he had obtained no marked results. Professor Houston, in closing the discussion, said that he could not agree with the President that osmosis can be neglected in the study of the physics of electro-osmosis. As it is a mutual but unequal mixing of the fluids, there must be a transportation of material from the negative to the positive pole, as well as from the positive towards the negative, and therefore he saw no good reason for placing the same material on both electrodes. The fact that the current, depending upon its direction, aids or retards the kataphoric current, shows how intimately electric phenomena are associated with ordinary osmosis.

### THYMOL AS AN ANTHELMINTÌC.

In a recent number of the London Lancet, Dr. Sonsino, of Pisa, contributes an article upon this subject.

The history of the greater number of new drugs proposed as remedies is generally as follows: A certain substance is suggested as a remedy against a particular disease. After some hesitation we find that the new drug extolled by numerous observers in every quarter of the medical world is useful only against one particular disease. After a time its use is generalized, as it were, and extended to other ailments, and we now find its virtues lauded in many cases and many diseases. By and by a reaction sets in, drawbacks are discovered, it is no longer the general panacea, and it is only after a long time that the true therapeutic position of the drug is at last defined, if it does not eventually fall into complete disuse and oblivion. It seems that thymol is now passing through the common ordeal. It was first used by Bozzolo in 1880 against anchylostoma. After some hesitation its efficacy was confirmed by many practitioners, and it is now accepted as the best remedy in anchylostomiasis in such a manner that it has generally superseded the liquid extract of male fern, which was the only other remedy that for some time could compete with it; but the efficacy of thymol in anchylostomiasis was hardly established when already it was tried in other ailments, and especially as a general anthelmintic remedy. At the present time, if we could trust the assertions of some hasty advocates, it is the best remedy against all the intestinal worms, tænia among the number, and also against hæmatozoa, as filaria sanguinis hominis nocturna. Great credit is due to Dr. Crombie, of Calcutta, for having shown that about ten grammes per diem of thymol, given for three successive days, are not enough to cause the disappearance of the embryo filaria

from the blood, contrary to what has been asserted by others, who state that daily doses of some fraction of a gramme of this drug, taken for a certain number of days, are sufficient to cure radically filarial disease. Sonsino has seen more recently this inefficacy of thymol against filariæ sanguinis hominis confirmed by Dr. Manson. Perhaps Dr. Crombie has been too hasty in believing that thymol, while impotent in the case of the filariæ of the blood, is nevertheless effective against intestinal worms, tænia included. He therefore brings forward in the Lancet his experience on this subject. he has had numerous brilliant successes with thymol in anchylostomiasis, so that in this disease he can testify that it acts often as a charm, he confesses that there are some cases—rare, it is true—in which difficulty was found in ridding the intestine of anchylostomes even with this remedy. He had recently in hospital a longstanding case of chronic disease, which was complicated with anchylostomiasis. After the administration of the drug the stools contained anchylostoma eggs in as great abundance as previously to the commencement of the thymol treatment, and as they are found in the stools of patients from whom thymol expels some hundreds of anchylostomes, he could not explain in a reliable manner the cause of this non-success. He argued that it might be due to the circumstance of there being a certain number of worms hidden in the walls of the intestines and others under the folds of the valvulæ conniventes, in such a manner that the thymol may have passed without exercising its toxic action upon the parasites, or it might have been that an extraordinary abundance of tenacious mucus enveloped the worms, and so preserved them from the action of the remedy. Unfortunately, the patient, who one year before had been operated on for an abscess of the liver, and who had fallen into a state of marasmus from diarrhœa and vomiting, became worse, and, seeing his end approaching, preferred, in September last, to leave the hospital and go home to die. Consequently no post-mortem could be obtained whereby the number of anchylostomes could have been counted and the reason for their non-expulsion explained. Such rare cases as this of non-success must not detract from the merits of thymol as a remedy against anchylos-The author insists, however, that its efficiency in anchylostomiasis cannot in any way authorize us to proclaim it a universal anthelmintic, applicable to all intestinal worms, without positive proofs of its efficiency in the case of each individual species of parasite. He asserts that the only worms he has occasionally

seen expelled along with the anchylostoma, after the administration of thymol, were ascaris lumbricoides, oxyuris vermicularis, and trichocephalus dispar. But while the expulsion of anchylostoma is the rule with thymol, this drug acts on the other worms mentioned only exceptionally, in the majority of instances failing entirely to cause their expulsion. Consequently in ascaris lumbricoides he does not trust to thymol so much as to other ordinary remedies, such as santonin, for which he now prefers, on account of its insolubility, to substitute its product santoninossima, introduced by Coppola. As for oxyuris vermicularis, which, on account of the liability in the case of this parasite to self-infection, is of all the intestinal worms perhaps one of the most difficult to completely eradicate, he has found that with thymol it can be gotten rid of more completely than with other means at our disposal, especially when it is applied by enema. Respecting trichocephali, the difficulty in procuring their expulsion with any remedy is well known. After his first trials, in which he found in some cases trichocephali in the stools following the administration of thymol, he entertained the hope that this drug might prove an efficacious remedy against this worm. As the ordinary seat of the worm is the cæcum, he suggested that its expulsion might be better assured by using thymol in But if used in this way, as the thymol must be given in solution, he fears that it could not be administered in doses sufficiently large to prove efficacious without proving hurtful to the organism of the host from absorption. deed, thymol introduced into the circulation is certainly a poison, even in small doses. If we risk giving it in such large doses as 4, 6, 8, and even 10 grammes per diem, it is only because we administer it in powder, and can trust that, if absorbed at all, it will only be so in a very minute amount. The evidence of absorption having taken place is afforded by the patient being attacked with vertigo, and by his urine becoming brownish. These unpleasant symptoms are only met with in rare cases after the administration of such a dose as 4 grammes of thymol. From what he has said it will be seen that thymol will not prove so sure a remedy against the three næmatodes named as it is against anchylostoma. As for tænia, he has never tried thymol against tænia solium tor tænia mediocanellata, because he thinks that pelleterine, properly administered, is now the best remedy against the large tape-worms. states, however, that in cases of anchylostomiasis complicated with tænia nana he obtained with thymol the expulsion of the former, but not of the latter. The tæniæ were expelled only after recourse was had to the liquid extract of male fern and calomel. In a case of tæniæ nana in a child two years of age, he succeeded on one occasion in bringing away more than one thousand specimens of this small cestode with only 1½ grammes of liquid extract of male fern combined with 15 centigrammes of calomel.

He has never read of any well-ascertained instances of expulsion of the large tape-worms by thymol, and should be grateful to Dr. Crombie or to any other practitioner for publishing such cases, with full particulars, if they are acquainted with them. Indeed, it seems that the results of Bozzolo's and Lutz's experience, though contributing perhaps to the wider adoption of thymol as a general anthelmintic, especially against tæniæ, are not so conclusive as to replace pelleterine by thymol. Bozzolo, in the work cited, speaks only of a case in which, after the use of thymol, he did not succeed in seeing the scolex with the strobila. He adds that the patient (a woman) after eight months had not passed any proglottides, and that she felt well. Lutz, in his last work, says he has never seen the complete expulsion of a cestode by thymol; nay, in two cases of bothriocephalus he has ascertained that after some time the patients still suffered from the presence of the worm. Only in some cases of tænia had he noticed that after incomplete expulsion the worm no longer appeared. After all, Lutz only declares that thymol had proved for some patients the more agreeable remedy, but at the same time he put it in the second line, and after pelleterine and koussine. Giles, who more recently has had the opportunity of trying thymol on a large scale against the anchylostoma in Assam, says that he had no occasion to try it against tænia; but that from what he gathers from others, thymol would appear to be a far more efficient vermifuge in dealing with tæniæ than male fern or any of the other drugs more commonly used for that purpose. But among the latter he does not mention pelleterine. Having nowadays at our disposal pelleterine, he thinks it useless to have recourse to thymol, which certainly offers more drawbacks than pelleterine. Dr. Walker, in Sandakan Hospital (British North Borneo), and Giles, in Assam, each obtained once the expulsion of a specimen of distomum crassum by thymol used against anchylostoma. Certainly these two observations (up to the present there are no facts telling against them) are in favor of the efficiency of thymol against the large Asiatic fluke. But we cannot forget that in a case cited by Cobbold the expulsion of several specimens of this fluke followed the employment of a milk diet simply, and in others the same result has followed a milk diet unaided by any other treatment.

To conclude, the writer believes it would be a therapeutic mistake to infer that a substance which is truly efficient against some given parasite must also prove successful as a general anthelmintic. Experience teaches us the contrary in the case of every drug having an action on some particular worm. As for thymol, he asserts as the result of his experience that it is an effective agent generally against the other three intestinal anchylostoma, but very uncertain against the other three intestinal næmatodes he has referred to, and entirely ineffective against tænia nana. As for the method of administration of thymol, he thinks that the best plan is to give it in powder in wafers or cachets. He finds that tabloids are not of any advantage, because so many have to be taken at a time if we wish to introduce the drug in doses of several grammes, and the thymol being acrid, the direct contact with the mouth might prove hurtful.

THE INFLUENCE OF ERGOT ON THE IN-VOLUTION OF THE UTERUS DURING THE LYING-IN PERIOD.

In the Lancet for November 19, 1892, Mr. HERMAN contributes the following article:

In the "Transactions of the Obstetrical Society of London," vol. xxx., for 1888, will be found a paper by Dr. C. Owen Fowler and Mr. Herman, in which observations are detailed pointing to this general conclusion: "That the administration of an ergot mixture during the first fortnight of the lying-in period appreciably increases the rapidity with which the diminution in size of the uterus goes on." This conclusion was reached by comparing the average rate of involution (a) in a number of cases, taken without selection, in which ergot was given, with (b) the average rate of involution in an equivalent number of cases, also taken without selection, in which ergot was not given. In the Annales de Gynécologie, vol. xxix., for 1888, p. 175, is published an investigation by Dr. Emile Blanc, of Lyons, conducted in a very similar way, but which led him to the conclusion that "ergotine administered during the first five or ten days of the lying-in period exerts no favorable influence on uterine involution." Dr. Blanc's re-

search was quoted at the time in several Eng-These two investigations seem lish journals. to contradict one another. Mr. Herman desires to point out that they do not; but that, on the contrary, they confirm one another, and show the real value of ergot in the lying-in The reason that Dr. Blanc's conclusion differs from that of Dr. Fowler and Mr. Herman is this, that he chose the cases in which to test the effect of ergot. He took only cases of "normal delivery at full term, excluding premature labors, cases with febrile disturbance, and all cases needing any intervention" (p. 177). These cases excluded are just those in which the causes known to hinder involution are present. Dr. Fowler and Mr. Herman took cases without any selection, and therefore among theirs were included cases in which the causes of subinvolution were present. Dr. Blanc's research shows that in a normal lying-in the uterus completes its involution as well without ergot as with it. The paper by Dr. Fowler and Mr. Herman shows the beneficial effect of ergot in counteracting the causes which retard involution. Dr. Blanc's paper contains nothing in opposition to this view; on the contrary, he expressly says, "Against secondary hemorrhage the drug maintains its Its action is the more efficacious the nearer the delivery." The practical conclusion is, that while in a perfectly normal lying-in ergot is not required, vet when any cause of imperfect involution is present, or suspected to be present, ergot, given throughout the lying-in period, will counteract its influence, will promote involution, and should be given.

#### A WARNING CONCERNING THE CHLORIDE OF ETHYL.

In the London Lancet for November 5, 1892, Dr. H. RADCLIFFE CROCKER calls attention to the fact that the vapor of chloride of ethyl when inhaled is not altogether free from injury.

Having occasion to scarify a small patch of lupus erythematosus on the nose of a young lady, the writer thought it a favorable opportunity to try a chloride-of-ethyl tube. The spot was frozen well enough, but the patient turned pale, slightly livid, and stopped breathing, looking very like a person under oxide gas. As the ethyl was at once taken away, she recovered in a few seconds, but Dr. Crocker states he will certainly not use it again to any part of the face where it is possible that the vapor can be inhaled. Chloride of ethyl

applied by means of a tampon is far safer and easier, but care must be taken not to over-freeze the skin or a dermatitis may be set up.

## THE TREATMENT OF MYXŒDEMA BY THE INGESTION OF FRESH THYROID GLANDS.

In the British Medical Journal for October 29, 1892, MACKENZIE reports a case of myxcedema treated by feeding the patient with fresh thyroid glands. We have already in previous issues of the THERAPEUTIC GAZETTE published accounts of Dr. Murray's experiments in regard to the influence of the juice of these glands in cases of myxcedema. In the same number of the British Medical Journal, Dr. Fox, of Plymouth, reports a case.

The accounts published recently in the British Medical Journal by Dr. Murray and others regarding the treatment of myxœdema by means of subcutaneous injections of an extract of the thyroid glands testify so unmistakably to the beneficial effect resulting therefrom that the method will probably receive a more extensive trial. This mode of treatment is not, however, free from objection. First, it requires the most scrupulous care in the preparation of the extract, the demand for which is never likely to be so great as to enable it to be supplied, when manufactured under the ideal conditions, at less than an almost prohibitive price, and few medical men have the time to devote to its preparation themselves. Secondly, the application of the remedy sometimes produces alarming immediate symptoms. such as loss of consciousness and tonic spasm; and remoter effects, such as indurated swellings and abscesses at the seat of injection, have followed the use of even the most carefully-prepared extract. When it is remembered that these injections have to be personally administered for the remainder of the patient's life by the medical attendant, these risks, however slight in regard to a single application they may appear, become immensely magnified when a long series have to be taken into

These objections are of great moment as regards the future use of this plan of treatment, although not in the least detracting from the value and interest of the results which have so far been obtained.

The method of treatment Mackenzie has employed is altogether so very much simpler and safer, and so very easily carried out, and the result in the case in which he tried it has been so striking and encouraging, as well as interest-

ing, that he publishes a short account of it, in order that others may have an opportunity of putting it to the test. The method consists essentially in administering by the mouth either the fresh thyroid glands themselves or a freshly-prepared extract. It is obvious that this mode of treatment can be perfectly easily carried out. No elaborate antiseptic precautions have to be taken. There is no more difficulty in getting thyroids, once it is explained what is wanted, than there is in getting kidneys. All the dangers attending hypodermic injections are avoided.

When the writer started with the treatment he was sceptical as to whether any effect at all would result, and therefore commenced by giving his patient two whole sheep's thyroids at a time. This amount, however, is more than necessary or advisable, as it is apt to nauseate.

Also on two occasions he gave her by the mouth some extract which he had prepared by Mr. White, of St. Thomas's Hospital. The effect on the temperature and pulse, as well as on the general condition of the patient, has been very striking. Under what he considers an overdose of thyroid the pulse-rate increased to 116, and the temperature on one occasion rose to 100° F., but the maintenance of a normal temperature by proper amounts can easily be effected, he believes.

Probably half a thyroid gland occasionally will prove to be sufficient. The return of perspiration and a feeling of warmth, and the disappearance of all swelling from the hands and feet and its great diminution in the face are unmistakable. He has now had the patient under his care for two and a half years, and has seen her very frequently during that time. She would not now be recognized as the same person.

To sum up the effects observed in this case:

1. A marked acceleration of the pulse and rise of temperature proportional to the quantity of thyroid given, these persisting for some time after the administration is discontinued.

2. A general diminution of the swelling and amelioration of all the symptoms accompanying myxcedema.

In the administration it has been found that it is less nauseating when given with a little brandy. In another case, as he has already mentioned, he should be inclined to commence the treatment with either one thyroid every other day or half a thyroid every day. If it is found that this is well tolerated and does not produce any marked effect, the dose can be easily increased. The method is one which

experience will no doubt much improve on; but it will be a great advance if further observation confirms what has been observed in this case,—that a remedy easily obtained, taken by the mouth, should produce marked improvement in a disease hitherto intractable except by hypodermic and somewhat risky injections.

Dr. Fox's case is as follows:

E. M., aged forty-nine, came under the author's care at the Plymouth Dispensary in March last. She at that time exhibited all the typical symptoms of a well-marked case of myxædema. Fox showed her at a meeting of the Plymouth Medical Society, and consent was unanimous in favor of myxædema.

The disadvantages of having to treat cases of myxcedema by continued hypodermic injections are many and obvious. He therefore determined to try the effect of thyroid extract when taken by the mouth. He directed the patient how to prepare a glycerin extract of half a sheep's thyroid, on much the same lines as laid down by Dr. Murray. Of the extract thus prepared she was to take half one hour before breakfast and the remainder one hour before supper, and to continue doing so twice a week.

She commenced the treatment on June 2. On July 11 she showed very visible signs of improvement; her facial expression was decidedly brighter, her speech was better, and she felt generally much stronger.

On September 12 the improvement had continued. The skin was soft and perspired freely; the cedema was much less. She was ordered to take half a thyroid, lightly fried and minced, to be taken with currant jelly once a week, and to continue taking the extract once a week. By mistake she took the minced gland twice a week for a fortnight; she then noticed that she was getting rapidly weaker, profuse perspiration breaking out on the least exertion; she was unable to walk or stand steadily. She left off taking the gland on September 22, and began rapidly to recover her strength.

On October 17 she considered herself well, and better than she was two years ago when the symptoms of myxœdema first began. Her condition now is in every way satisfactory. Her face has assumed its ordinary proportions, her speech is normal, the œdema has gone, and menstruation has returned.

Dr. Fox states that he has reported this case, as the method of administering the remedy is simple in the extreme, and in his case, at all events, the result has been satisfactory. If he

had another case to treat, he states, he would begin with small doses of the minced gland, as that seems to be more potent, gives less trouble in preparation, and is preferred by the patient.

### AN ANTIPYRIN EXANTHEM, WITH ULCERATION.

PROFESSOR J. MOELLER reports, in the Therapeutische Monatshefte, November, 1892, that in November, 1891, he took 15 grains of antipyrin for headache. On the following morning he was surprised to find the joints of his fingers swollen and, together with the backs of the hands, occupied by erythema. The lips, the orifices of the nose, the auditory canal, and the conjunctivæ were also reddened, swollen, and somewhat painful. Moreover, there was a sharply-circumscribed erythema on the skin of the scrotum and glans penis, and on the corona of the latter an ulcer developed, which healed without scarring in fourteen days, under the care of a colleague. Moeller thought the ulceration was due to the fact that the part had not been protected by a dressing. The rest of the exanthem disappeared in three or four

It is remarkable that before this time he had been able to take antipyrin without any bad after-effects. To test the causal influence of the antipyrin, he again took 15 grains for migraine on December 26. In ten minutes he felt a burning pain upon the lips and glans peais, and an erythema speedily developed, with much itching and pain. On the following morning ecchymoses had formed upon the dorsum of the first phalanx of the thumb, and on the skin of the scrotum and folds about the anus were several excoriated spots; on the corona of the glans penis was a blister in folds similar to that of a burn. In spite of a protective dressing an ulcer formed, and was slow in healing, as in the first instance.

#### DISTURBANCES OF THE SKIN DUE TO DEFICIENCY OF FAT.

PROFESSOR O. ROSENBACH (Therapeutische Monatshefte, November, 1892) includes under this head the dermatitis which occurs upon the hands of surgeons from the use of antiseptic lotions. Chlorotic persons, he says, have such disturbances simply from the use of cold water and alkaline or neutral soap; the elbows and knees are favorite seats for thickening and fissuring of the skin. He includes also the profuse sweating in fat persons, and furuncles.

As regards treatment, sebaceous matter being deficient, fat must be supplied by the use of lanolin, unsalted fresh butter, cold cream, or lard; there are cases also where vaseline is use-The important thing is to supply to the superficial layers of the skin a readily-absorbed fat. In furuncles of the neck, the whole neck up to the edge of the hair should be rubbed with fat of some kind several times a day, especially on hot days, the sweat being first carefully wiped away. The excess of fat should at once be wiped away with a soft cloth. In dermatitis of the hands, the hands should be rubbed with fat or lanolin after every washing and at bedtime. Glycerin is not suitable when the skin is very dry. It may be used upon the hands after washing and when the hands are still . moist.

Furuncles of the nose should be treated with applications of cold cream or lanolin upon pledgets of cotton. Vaseline is not suitable, as many persons find it irritating. The application needs to be repeated more frequently if the patient remains in hot rooms.

The dermatitis of the elbows and knees referred to can be cured in from one to two weeks by inunctions of unmedicated fat. The inunctions should be performed two or three times a day. Superfatted soaps are not suitable in any of the cases mentioned.

#### THE TREATMENT OF DYSPEPSIA.

In the treatment of this disease HAYEM (Revue de Thérapeutique Générale et Thermale, December 22, 1892) recommends the following:

- 1. Remove at once all sources of irritation; prescribe a more or less relative rest of the stomach, and advise a diet of easy and prompt digestion.
- 2. Employ moderate revulsives in order to modify through a reflex mechanism the irritation of the stomach.
- 3. As medicinal agents use those that exercise a sedative action on the stomachic processes, especially those tending to diminish the production of chlorated elements; to modify fermentation, and to calm hyperæsthesia or nervous erythism, washings of the stomach and mineral waters are of service.
- 4. Employ hygienic measures and medicinal agents, with a view to exercise a tonic and sedative action on the liver.
- 5. Finally, when in chronic cases there is a condition of gastric atony, or when the irritation is the consequence of static disturbance,

mechanical means should be resorted to, such as electricity and massage.

In regard to washings of the stomach, Hayem recommends strong alkaline solutions of a strength of 20 to 30 in 1000, at a temperature of from 35° to 38° C., or with a solution of nitrate of silver of the strength of 1 in 1000. In this connection permanganate of potassium, of the strength of from 50 centigrammes to 2 grammes in 1000, has rendered good service.

Of medicaments, the author uses the most efficacious and least dangerous drugs, such as bicarbonate of sodium and calcined magnesia, the phosphate and the sulphate of sodium. The diet should be carefully guarded. In well-marked cases milk, in from 60 to 200 grammes, three or four times during the twenty-four hours (being careful that the intervals are always the same), is ordered, at the temperature best suited to the taste of the individual patient. If this article is well borne, the amount may be increased.

Thirst can be allayed by small, warm washings.

For vomiting, a mixture containing from 2 to 5 centigrammes of the extract of belladonna is recommended. Lukewarm baths, simple or alkaline, of short duration, are advantageous for calming nervous erythism and in causing sleep, and also in diminishing acidity.

The application of a wet compress over the epigastric region is advised as a good measure. The evacuation of the stomach is indispensable. The author, therefore, recommends washings of the organ night and morning, giving preference to a solution of salicylic acid of the strength of 1 in 1000. For the administration of progressive diet, the author is in accord with the method of Leube, which is as follows:

- 1. Bouillon; milk; eggs, raw or soft-boiled; biscuits, without sugar; pure water, and mineral and gaseous water.
- 2. Brains; boiled rice; boiled pigeon; boiled calf's feet; fish: chicken (avoid the skin); soups, mixed with tapioca and scrambled or beaten eggs.
- 3. Half or entirely raw meat; roast beef; lean ham; a few white potatoes; a little bread, not too fresh; small quantities of tea and coffee with milk.
- 4. Roast chicken and pigeon; venison; partridges; cold roast beef; veal; macaroni; rice-pudding.

Later the author allows a little Bordeaux or Rhine wine one or two hours before meals. The patients should avoid all excesses, and should be particularly careful in the diet prescribed.

#### HYPERCHLORHYDRIC DYSPEPSIA.

Writing upon the subject of hyperchlorhydric dyspepsia, G. BARDET (Les Nouveaux Remèdes, November 24, 1892) believes that the chief symptoms observed in such cases may be said to depend upon the following conditions: 1, inactivity of the skin; 2, a tendency to an increase of the chlorhydric function; 3, a tendency to a vitiated fermentation, flatulency, constipation, and a tendency to hemorrhoids; 4, production and reabsorption of toxines; 5, considerable production of gases in the stomach.

In regard to treatment, the first two conditions must be dealt with on general principles, and according especially with the methods advocated by Dujardin-Beaumetz. In the first instance rest should be enforced after each meal, and in the second instance a well-regulated diet is advised, with total suppression of meat. To avoid vitiated fermentations, antisepsis of the alimentary tract is of the greatest importance. In such cases drugs like naphthol, benzoated naphthol, asaprol, salol, and the salicylate of bismuth are recommended, and particularly the benzo-naphthol and the bismuth salt, in doses of 10 grammes a day of the former medicament and from 2 to 3 grammes of the latter drug after each meal. Eucalyptol and hydrate of magnesium, especially the second drug, should also be tried. In the treatment of constipation, the employment of quassine (in doses of 2 centigrammes of the amorphous preparation, or 2 milligrammes of the crystalline powder) is advised. Flatulence can be overcome by a well-regulated diet.

Three things, finally, must be borne constantly in mind regarding the treatment of such cases: First, the occurrence of fermentation due to the presence of gas in the stomach; second, the necessity and utility of a mixed vegetable diet; third, the increase in dosage of the remedies employed in order to bring about intestinal antisepsis.

#### THE ICE-BAG AS A THERAPEUTIC AGENT.

Those who remember reading the article of Dr. Kinnear in a recent number of the Therapeutic Gazette will be interested to learn of the views held by Dr. Lees, of Cambridge, England, as to the value of cold as a local application.

In an article in the *Clinical Journal*, a weekly which has just issued its first number, he points out the value of the ice-bag in a number of affections.

The value of the ice-bag in therapeutics is still very inadequately recognized. Tradition sanctions its employment for the arrest of hemorrhage in hæmoptysis and in typhoid fever, though its utility in these conditions is open to question. But in visceral inflammation, with the single exception of meningitis, it has been avoided and even imagined to be dangerous. Moist warmth has been relied upon to relieve pain and to dilate the superficial bloodvessels, so that the application of poultices has long been the routine treatment of visceral inflammations, and a diagnosis of pneumonia, pericarditis, pleurisy, or peritonitis appears to the majority of practitioners an irresistible call for poultices. But the reign of poultices has nearly ended. In surgery it has been almost banished by the antiseptic, and still more by the aseptic, measures which have, during the last fifteen years, completely transformed surgical treatment. In medicine it still exists in some quarters as a survival,—not of the fittest, for in medical cases in which moist warmth is desirable hot, moist flannels, with or without the addition of turpentine, are usually to be preferred. But it will soon be generally recognized that many visceral inflammations ought to be treated, not with warmth, but with the local application of cold, precautions being, of course, taken to prevent any undue chilling of the body generally.

Dr. Lees's first experience in the use of the ice-bag in pneumonia was in January, 1885, and the remarkably beneficial results which followed, when it replaced the poultices employed during the first two days of treatment, impressed him greatly. And in this first case he noted a fact which has often been observed subsequently, and which is of the greatest importance in an estimate of the value of this treatment,—the fact that where the ice-bag had been applied there was produced a rapid improvement in the physical signs, although, at the same time, the disease was still present, and sometimes even extending, in other parts of the lungs.

In the Lancet for November 2, 1889, Dr. Lees published an account of eighteen cases of lobar pneumonia and broncho-pneumonia treated with the ice-bag, all of which recovered. In that paper he drew attention to the fact that the improvement caused by the ice-bag was not simply a reduction of temperature (though that often occurred to the extent of three or four degrees), but was also a remarkable diminution of the physical signs over the diseased area and an amelioration of symptoms.

Since publishing his cases he has continued

the use of the ice-bag in the treatment of pneumonia, and is satisfied that, in addition to its beneficial action in the reduction of temperature, it does tend to check the local inflammation of the lung. And no difficulty need be felt in accepting this statement on the ground that pneumonia is a specific disease due to the presence of micro-organisms, for Dr. Burdon Sanderson stated in his Croonian Lectures (British Medical Journal, November 28, 1891, p. 1137) that "the pneumococcus is one of the most remarkable microphytes known; first, because, under certain conditions, it is so extremely virulent; but, secondly, because it exemplifies the general principle that virulence is one of the most variable attributes of a microphyte,—one which is most affected by its environment." Hence it is readily conceivable that an alteration in the environment, produced by the persistent application of cold. may be a powerful factor in checking the growth of the specific organism. He does not, of course, claim that it will save every case of pneumonia (many of those due to influenza or alcoholism, or of septic origin, are hopeless under any kind of treatment), but he believes that it is capable of saving some lives which would be lost if fomentations or poultices were employed, that it reduces the severity of symptoms, relieves pain, gives comfort to the patient, and brings about an earlier and a more rapid convalescence. The relief of pain is often very striking, and not infrequently, after the removal of the ice-bag, patients ask for its reapplication on account of the comfort they experience from its presence. A few months ago he saw, in consultation, a lady of sixty-two, suffering from pneumonia, whose condition was critical, and growing worse. With some reluctance, on account of her age, he suggested that the poultices should be replaced by an ice-bag, and arranged to see her again three hours later to watch the effect. The change was carried out, and to his inquiry how she liked the ice, she replied with emphasis, "It's delicious!" When he removed the ice, in order to examine her chest, she exclaimed, "I must have my bag again!" Her improvement commenced with the application of the ice, and she was soon convalescent.

In acute pleurisy, apart from pneumonia, the ice-bag is often very helpful: it quickly relieves pain, and has often seemed to cut short the disease. Its action may be aided by tightly strapping the affected side, so as to restrain the movements of respiration, the bag or bags containing ice being then applied over the strapping. If the symptoms are very acute, it is

useful to commence the treatment by the application of a few leeches. When a serous effusion had occurred into the pleural cavity before the case comes under treatment, he has seen the use of an ice-bag apparently of great service in hastening absorption.

Pericarditis is as amenable as pleurisy to the local influence of ice, and the author has reported eight cases rapidly relieved by this Pain is soon relieved, the extent and loudness of the friction rub quickly diminish, and effusion is checked. More than once the writer has seen pericarditis treated by the ice-bag subside without any enlargement of the area of cardiac dulness. The pulse becomes stronger and less frequent, the dyspnœa lessens, and it is clear that the local influence of ice on the heart in pericarditis is not depressant, but decidedly tonic. In conversation recently with Dr. Leech, Professor of Therapeutics in the Victoria University, the author was interested to find that he also had observed, and was much impressed by, this tonic influence of the ice-bag in pericarditis.

Dr. Lees has seen a recent pericardial effusion rapidly absorbed beneath an ice-bag; in this case the diminution of the increased præcordial dulness was distinctly made out within a few hours after the application of the ice, and it steadily continued. In pericarditis it is impossible to explain the improvement caused by the ice as being due to mere reduction of temperature, for in pericarditis this is often not much raised, and it is sometimes very little depressed by the ice-bag, which produces so much improvement in the physical signs. And if it be true that the local application of ice does diminish the violence of a pericarditis, it is a fact of the greatest possible importance in practice. Pneumonia, on recovery, leaves the lung little the worse, but pericarditis is apt to involve and damage the muscular structure of the heart, causing permanent dilatation of the cardiac cavities, especially of the right ventricle, and a case of "cured pericarditis" is, in very many instances, a case of crippled heart. Hence it is of the first importance to arrest a pericarditis as soon as possible, and from this point of view he believes ice will be found a very great gain. Experience is as yet too limited to warrant any definite statement about the after-history of these cases, but from Dr. Lees's records he feels confident that it will be found in the future that the use of ice in the treatment of a case of pericarditis will often have the result of preventing the loss of many years of the patient's life.

With regard to peritonitis he has little to

say, but points out that the local application of an ice-bag is often of great benefit in the less acute inflammations of the vermiform appendix ("perityphlitis"). In the more severe cases of this kind, where decided symptoms of peritonitis are present, no time should be lost in any palliative treatment, for such cases are generally the result of the perforation of the appendix' by a concretion, with an acute local abscess, and, if not operated on, are rapidly fatal. He has had five cases of this kind under his care during the last three years. The first was not operated on, and died in three days from the earliest symptoms; the other four were submitted to operation within a few hours after admission to hospital. All of them were found to have the condition above described; all four recovered rapidly and completely (see Clinical Transactions, 1892, p. 135).

But where the inflammation of the appendix is less acute, the local application of ice often produces very rapid relief of pain and diminution of the swelling. Any one who watches the effect of the ice-bag on this purely local inflammation will be prepared to accept its local influence in pericarditis and in pneumonia.

In catarrhal laryngitis the ice-bag quickly reduces the congestion, and thus diminishes the urgent symptoms; even in diphtheritic laryngitis it sometimes has given distinct relief.

It is not necessary to advocate the ice-bag in meningitis, but Dr. Lees reports a case of posterior basic meningitis in a young girl recently under his care at the Hospital for Sick Children, in which ice, applied to the occiput and nape of the neck, had more influence in checking obstinate vomiting than all the drugs and other means which were used.

In infantile paralysis, if seen within fortyeight hours after the onset, an ice-bag applied over the affected region of the spine may be expected to render good service. It is not often that these cases are brought to a hospital sufficiently early to give this treatment a chance, but in one case at least it apparently proved successful, the resulting paralysis being very limited.

Dr. Lees passes over the employment of ice in the treatment of orchitis and some cases of hernia, for of these he has no experience, and then points out the benefit which he obtained in recent cases of sciatica. It is now well understood that sciatica is usually not a neuralgia, but a neuritis,—that it is due to a local affection of the nerve-trunk. Hence it is not unreasonable to expect that an ice-bag applied

over the inflamed part may do good. On two or three occasions he has seen very rapid improvement produced in this way.

Where the sciatica has lasted for several weeks, one can hardly expect much benefit from the ice-bag; yet it has given marked relief (not cure) in a case of three months' standing, the patient having been in bed for a fortnight, and having had morphine injections three times, acupuncture three times, and eighteen flying blisters, all without benefit. The application of ice quickly "deadened" the pain and enabled him to sleep. The improvement continued, and further benefit was obtained by massage.

In inflammatory conditions of the eye the value of iced applications is now generally recognized. Mr. Silcock states that they give the greatest relief in some cases of purulent conjunctivitis and of traumatic iritis, and that they are frequently employed as a means of preventing the occurrence of iritis after operations for cataract.

In country districts it may be impossible to procure a supply of ice in summer; in towns it may always be obtained from a fishmonger. The block of ice needs to be broken up into small masses; this can easily be effected by means of a hammer and a pin. If an ice-bag is not at hand, it is usually possible to obtain a water-proof sponge-bag. Two or three new sponge-bags should be procured, and the larger the better; as a rule, two such bags are needed at once. When the bag has been loosely filled with small masses of ice, its mouth must be firmly tied, in order to prevent any escape of water. It is sometimes almost impossible to hinder this altogether, but a soft absorbent towel may be placed all round the bag. This difficulty led Dr. Lees to give a trial to Leiter's coiled tube, but he found it irksome to the patient and not so efficient.

Another difficulty is that of keeping the icebag in its proper position, especially when the patient turns in bed. Any such movement is apt to displace the bag from its contact with the wall of the thorax, and sometimes to invert it, and thus favor the escape of water and wetting of the bedclothes. Often it is possible to prevent these undesirable results by fixing the bag in its proper position by a few turns of a light bandage, but if there is much dyspnœa this may not be possible, and we must then rely on the carefulness and skill of the nurse. who will alter the position of the ice-bag when the patient moves in bed. This difficulty is less serious than might be imagined, because the soothing effect of the cold applications is to diminish restlessness and enables the patient to lie more quietly.

If there is great local tenderness which resents even the light pressure of the ice-bag, suspension should be tried, but in this case the nurse must take especial care to see that the suspended bag is kept actually in contact with the surface.

There is not usually any difficulty in persuading patients to allow the application of an ice-bag, and after trying it for a time they are generally well pleased with it. Twice Dr. Lees has known it to be thrown off after a few minutes in the delirium of pneumonia, and occasionally the patient has objected to the constraint of the position which it had involved, and which might have probably been avoided if he had been the sole charge of the nurse; but, as a rule, the ice-bag gives comfort, and often it affords great relief. Dr. Lees reports but one patient who, though doing well, objected to the treatment throughout.

There may sometimes be greater difficulty in private practice in persuading the friends of the patient to sanction the use of treatment so opposed to traditional notions; but, as a matter of fact, he has in consulting practice found this to be no real difficulty. Still, there is no doubt that the general practitioner must act warily in such a matter, and must remember that if recovery does not follow, he may be unjustly blamed.

Any real harm from the use of ice-bags may always be avoided by efficient nursing. In the case of an infant or young child the temperature should be taken hourly, and the ice-bag removed when the temperature falls to 100° F., and applied when it again rises to 102° F. At the same time the child's legs and feet should be wrapped in hot, moist flannels, and it may even be desirable to apply warm fomentations to the abdomen.

In adults also similar applications, or a hotwater bottle to the feet, are often of service, and dilatation of the cutaneous blood-vessels may be brought about by the use of such remedies as jaborandi, alcohol, and nitro-glycerin.

Special care must, of course, be exercised in the use of ice for aged or debilitated patients; but the case above narrated of a lady of sixtytwo, who found the ice-bag "delicious," shows that even at this period of life benefit may be derived from its employment. And even in such depressed conditions as influenza or alcoholism, it is possible to use this form of treatment with advantage, and Dr. Sansom, of the London Hospital, lately stated that apparently quite hopeless cases of alcoholic pneumonia

under his care had recovered after treatment with ice.

In such conditions the subcutaneous injection of strychnine will be found of considerable assistance, commencing with 2 minims of the official solution three times daily, and pushing up the dose to 6 or 8 minims, if no twitching of muscles is observed.

The length of time during which the use of the ice-bag should be continued in any particular case must be decided by the progress of the disease and the general condition of the patient.

Sometimes it is desirable to use it for a few hours, and then remove it for an interval longer or shorter, as the symptoms may suggest. Thus, it may be applied for four hours, then removed for a like period, and then again applied, and so on, or it may be used for longer periods during the day, and removed at night. Each case demands sound judgment on the part of the physician. Sometimes it may be continuously applied for a considerable period, such as two or three days, or even longer, without intermission.

Thus, in one of the cases of pericarditis above referred to, the subject of which was a girl of seven years of age, the ice-bag was kept in position over the heart during the greater part of 12 days; in fact, during 186 out of the 288 hours, commencing with a continuous application of 62 hours. The child liked the ice-bag, and the final result was most satisfactory.

The employment of this remedy no doubt calls for care and watchfulness both on the part of the physician and nurse, but with reasonable caution it involves no risk, and it is capable of rendering the most effectual service.

#### OINTMENT FOR URTICARIA IN CHILDREN.

L'Union Médicale for November 8, 1892, gives the following prescription:

R. Chloral, gr. x; Powdered camphor, Powdered gum-arabic, of each, 3i; Simple cerate, 3i.

Triturate together the first three substances until liquefaction takes place, and add the cerate. At night the ointment is to be applied to the area which is involved. It will diminish the itching and produce quiet sleep.

#### COLD APPLICATIONS IN THE TREAT-MENT OF CONTINUED FEVER.

In the London *Practitioner* for November, 1892, Dr. Fenwick contributes an article with

this title, in which he gives a thorough account of his application of cold treatment of continued fevers. The conclusions which he reaches are summed up as follows:

The mere reduction of the fever in cases of enteric fever or acute pneumonia does not constitute the entire treatment of the disease; it is, in fact, only the treatment of a single symptom.

But in the absence of specific remedies our efforts have to be directed to the perfection of such measures as may help to maintain life until nature steps in and effects the cure; and one of the most prominent indications in this connection is to save excessive wear and tear of the vital tissues by diminishing the injurious influences of pyrexia.

For this purpose the cold bath is undoubtedly the quickest and most reliable means at our command, and in urgent cases (hyperpyrexia) it is the only measure which proves of any service. But it has been already pointed out that so many inconveniences attend the administration of the bath that in numerous cases this method of treatment cannot be employed. He therefore describes the beneficial effects derived from the use of the ice-cradle combined with hot sponging, the main features of which may be summed up as follows:

- 1. In cases of moderate pyrexia (105° F.) the temperature of the body can usually be reduced about 1½° to 3° F., and maintained at a reduced point. Where the temperature exceeds 105° F., recourse must be had either to the cold bath or to the ice-pack.
- 2. The measures themselves are exceedingly simple in their execution and entirely free from danger.
- 3. In order to obtain the utmost antipyretic effect, strict attention must be paid to the various details connected with the use of the ice-cradle, especially with regard to the maintenance of a proper current of air through the apparatus.

#### THE TREATMENT OF DIABETES.

According to the Journal de Médecine de Paris for November 6, 1892, DUJARDIN-BEAU-METZ recommends the following treatment:

Immediately before breakfast and dinner he orders a glass of Vichy water (Hauterive), in which is dissolved one of the following powders:

Carbonate of lithium, 3iiss.

Make into 30 powders, and add 2 drops of Fowler's solution to each powder.

If the polyuria is excessive, after each meal he gives with some black coffee 15 grains of

antipyrin. In the morning the entire body is sponged off with warm water to which has been added a little cologne-water, and active friction is applied with the application. The mouth is to be rinsed out after each meal with the following mixture:

Boracic acid, 3vi; Carbolic acid, gr. xv; Thymol, gr. iii; Water, Oii.

Or,

Tincture of anise, Ziiss;
Essence of peppermint, gtt. x;
Ninety-per-cent. alcohol, Oi;
Tincture of cochineal, q.s. to color it.
Mix this with equal parts of water.

The following diet is then rigidly adhered to. The patient is to be nourished exclusively by meats of all sorts, by birds, oysters, and similar mollusks, crabs, and fish; beans, peas, carrots, Brussels sprouts, and similar vegetables are permitted.

It is also advisable to allow a certain amount of fatty food, such as sardines in oil, lard, butter, caviare, and similar articles. Various soups which contain starch may also be given. Any bread which is taken should be gluten bread or soja bread. For sweetening drinks, pastilles of gluten are to be employed. Tea, coffee, and kola are useful. Starchy foods are to be avoided. For drink, the patient is to be allowed a little red wine, either Burgundy or Bordeaux, which should be diluted with Vichy (Celestins or Hauterive, or the water of Vals). No brandy or other liquors are allowed. Exercise is advisable, but should not be carried to the point of much fatigue. The physician should insist that the patient should be out as much as possible in the open air, and massage is a valuable aid to treatment.

### AN INJECTION FOR THE INSOMNIA OF CHILDREN.

L'Union Médicale for November 1, 1892, states that SIMON employs the following injection for this purpose:

R. Chloral, gr. ii; Tincture of musk, gtt. xx; Tincture of valerian, gtt. xx; Distilled water, Zi.

This entire quantity is to be injected into the rectum, and, if necessity requires it, the dose may be repeated if sleep does not come on in the course of two or three hours.

#### THE TREATMENT OF ASCITES.

In the British Medical Journal for November 19, 1892, there is published a discussion of the prognosis and treatment of ascites, which was introduced by W. B. CHEADLE. We select from this article the following points in regard to its treatment:

It is worthy of note that in the discussion which followed this article, Professor von Schroetter, of Vienna, said that he had obtained good results from diuretin.

The objects to be sought are obvious: 1, to prevent the increase of fibrosis; 2, to remedy the atrophy and anæmia; 3, to relieve the injurious pressure of the ascitic fluid upon the abdominal and thoracic viscera.

Now, as to the means by which the first two ends are to be attained there will be, for the most part, little difference of opinion, and they may be dismissed briefly. To prevent the increase of fibrosis: abstention from alcohol and from stimulating foods. In the syphilitic cases the administration of iodide of potassium in addition. To remedy the atrophy and anæmia: nutritious, digestible food, with iron and acid and bitter tonics to aid digestion.

As to the third point, however,—the means to be adopted for the removal of the fluid from the peritoneal cavity,—there is no such consensus of opinion and practice. In looking through the text-books and treatises on medicine. with the exception of that by Dr. F. Roberts, who advocates paracentesis, a dreary uniformity of procedure is recommended. Purgatives. diuretics; failing these, tonics, or perhaps tonics are put first, to be aided by purgatives and diuretics. When all other means fail, paracentesis. This is the gist of it. It is allowed to be extremely unsatisfactory, but the routine is adhered to, and we cling to the practice sanctioned by precedent and authority, in spite of the fact that in nearly every case of recovery recorded a very different procedure has been adopted.

Purgatives.—Taking first the use of hydragogue purgatives without hesitation, that is a most disastrous and fatal practice. It is absolutely ineffectual as a means of reducing the dropsy; it is most effectual in reducing the strength and nutrition of the patient. Patients with cirrhosis, enfeebled as they are from difficulty of obtaining a minimum of aliment through the obstructed vessels, bear purging badly. It hurries the nutrient fluid through the alimentary canal too rapidly for absorption. The plan of giving the purgative in the early morning, before food is taken, mitigates, but does not neutralize, these ill-effects; a

large amount of nutritive material remains from previous feeding, and is drained away. Diarrhœa is only too apt to set in spontaneously, is most difficult of control, and of evil augury. Drastic purges are apt to set up uncontrollable diarrhœa, and the expression, "purged to death," is not infrequently sadly appropriate to the records of cirrhotic ascites.

Diuretics.—With regard to diuretics, it may be said that when the kidneys are sound they are at all events harmless. They are, however, constantly futile. It is generally allowed that diuretics fail when their aid is most needed, and the author states he has never yet succeeded in obtaining any material result in the removal of the fluid in dropsy of any kind by the aid of diuretics.

Cases are indeed recorded where the action of diuretics is credited with the cure of abdominal dropsy. Garrod, Duffin, Sieveking, and Wilks have each recorded instances in which copious diuresis has followed the use of the resin of copaiba, with more or less complete disappearance of the dropsical fluid, but the writer has never had this experience, and there are certainly many cases in which it entirely fails. Digitalis, calomel, sugar of milk in quantity; 100 grammes is stated by Dr. Germain Sée to be a most powerful diuretic, and the milk treatment of dropsies in India probably owes its success in certain cases to this element.

As a matter of fact, however, when the ascites is already great, it must be confessed (as Dr. Murchison pointed out) "that diuretics are of little avail, and fail to increase the flow of urine." The pressure on the renal veins interferes with the circulation through the kidneys, and renders diuresis impossible.

It is frequently found that while the most powerful diuretics have failed to excite the flow of urine, removal of the fluid by paracentesis is followed by a copious flow, even without the aid of diuretics. In ascites, then, while purgatives are mischievous, diuretics are usually ineffectual.

Paracentesis.—The only effectual plan of removing ascitic fluid is by paracentesis. In all the writer's cases, and in nearly all he can find recorded, repeated paracentesis has been one of the great points of treatment. And I would ask why we should nauseate and exhaust our patients with drugs, and weary ourselves in the vain attempt to remove the fluid by the roundabout channel of bowel or kidney, when it can be withdrawn by a simple mechanical process which, in these days of antiseptic sur-

gery, is absolutely devoid of risk? Surgeons lay open the abdominal cavity for small reasons without fear, while we hesitate to insert a small trocar. I presume that the reason lies in the fact that the weight of authority, as expressed in books on medicine, is against this procedure, except as a last resource.

Sir Thomas Watson spoke of it as a final resort with the faint hope of giving temporary relief. Frerichs opposed it on the ground that pressure on the vena portæ lessens the rapidity of effusion. Niemeyer says the abdomen should only be tapped when life is immediately endangered. Thierfelder says, "This operation must not be undertaken unnecessarily, but only in response to an urgent indication, as great dyspnœa, obstinate vomiting," and speaks of it only as treatment for relief of symptoms. "Tapping," he says, "invariably affords merely transitory amelioration." Murchison long approved the rule that the operation should be delayed as late as possible,—that is, until respiration is seriously affected,—on the ground of the loss of albumin involved. Aitken refers to tapping as "the last imperfect resource of our art." In the latest edition just published of one of the leading books on "The Principles and Practice of Medicine" (Fagge and Pye-Smith), the direction is, "It should not be performed until the distress caused by the distention of the abdomen becomes insupportable" (vol. ii. p. 300). Another says, "When the abdominal distention becomes so great as to cause the patient serious suffering or distress, the fluid ought to be removed by tapping. This operation is usually delayed as long as possible, and, on the whole, no doubt properly so" (Bristowe, 7th edition, p. 761). Another: "Paracentesis should be put off as long as possible, for the end of the disease often arrives soon after tapping, although in some cases ascites is cured by the operation" (Wickham Legge, in Quain's Dictionary).

Without doubt the postponement of paracentesis until urgent symptoms arise is a grave error. A change in this direction has come over medical opinion during the last twenty years. In a paper in the *Practitioner* in 1872, and since in his book on "The Practice of Medicine," Dr. Frederick Roberts first advocated repeated tapping, and published cases in support of it. In 1881, Dr. Duncan, and in 1873, Dr. McCrew, advocated it. In 1883, Austin Flint strongly urged it, giving ten cases of recovery under this treatment. Dr. Habershon supported it, and Dr. Murchison reconsidered the matter, and pronounced in favor of paracentesis "when the abdomen is moder-

ately distended by fluid." Quite recently, Dr. Bristowe has sanctioned tapping from time to time without waiting for extreme distention. Text-books, as a rule, however, still advocate the old system.

Consequences of Ascitic Pressure.—Yet look how grave the consequences of fluid pressure in the abdomen are. The diaphragm is pushed upward, so that abdominal respiration almost ceases; the lungs are imperfectly inflated; congestion, collapse, and basal bronchitis ensue. The heart is embarrassed by the upward pressure, increasing still more the impediment to the circulation already existing in the systemic and pulmonary vessels. The movements of the stomach are hampered, and the circulation in that organ, already impeded by the portal block, is made still more difficult. In the same way the spleen, the pancreas, the intestines all suffer, while the liver itself is injuriously affected, the pressure of fluid obstructing the portal vein and, most important of all, preventing the dilatation of the venæ communicantes, the new channels upon which the relief of the obstruction so vitally depends.

The kidneys do not discharge into the portal system, but into the vena cava, and therefore are not directly affected by the venous block. Their congestion in the late stage of ascites affords striking evidence of the disastrous effect of simple mechanical external pressure of fluid. When this becomes pronounced, the urine becomes scanty, high-colored, albuminous. There ensues, in fact, a passive nephritis, a lessened excretion of urea, a slight uræmia, adding systemic poisoning to the other disorders.

It should be urged, then, that the fluid which does so much harm should be removed early, before it causes serious pressure on the viscera. The functions of the various organs will be restored and time gained for the development of the collateral circulation.

It is certain that in many of these cases enough liver tissue remains to carry on life, if only the portal circulation can be sufficiently eased and the passage of nutriment into the systemic vessels sufficiently established by the development of the collateral channels. This is, however, a work of time. Frequently the patient is carried off before it is effected by the fatal effect of the ascitic pressure, by engorgement of lungs, by hydrothorax, by general failure from embarrassment of organic functions. To gain time is of the essence of cure. This can only be done with promptness and certainty by paracentesis, and with an amount

of wear and tear infinitely less than by purging or drugging with diuretics in the vain attempt to produce diuresis. The operation is perfectly free from risk if properly performed; at any rate, in the case of patients who have not reached the very last stage of exhaustion. Then, no doubt, tapping is sometimes followed by rapid sinking. I presume that this fact, and the not infrequent supervention of peritonitis in former days, led to the belief that after paracentesis the end would soon arrive, and to the counsel of delay. But there is no danger of sinking if the operation is done early; no risk of peritonitis if the trocar is aseptic. The writer has seen harm result from paracentesis three times: twice in the same week eight years ago, in the early days of antiseptic precautions, from peritonitis due to use of the same imperfectly-purified trocar; once since from collapse in a woman utterly broken down The great number of by alcoholic excess. cases known in which tapping has been repeated without ill effect, even hundreds of times, point to the intrinsic harmlessness of the operation.

Continuous Drainage.—The removal of the fluid by continuous drainage has been practised by Dr. Caille, of New York. He gives two cases in which recovery took place at the time, the patient dying suddenly of heart-failure some months later. Dr. Urso gives an account of nine cases treated in this way, but his results are not encouraging; four died directly from the operation. The best result obtained appears to have been a nine months' duration of life after. Dr. Elliot gives two cases, both fatal; so that this gives far less favorable results than repeated tapping.

Iodide of Potassium.—The drug which produces the most striking results in conjunction with repeated tapping in certain cases is iodide of potassium. The beneficial effects are probably limited to syphilitic cirrhosis. Bearing in mind, however, the close social association between alcohol and syphilis, and the impossibility of making a positive diagnosis in some instances, it is right to give the iodide in all cases when the liver is large and hard. It is right to give the patient the chance. The alcoholic cases, as a rule, no doubt bear it badly, but if it acts unfavorably, it can be omitted before material damage is done.

Mercury.—Mercury has long had a certain repute in the treatment of ascites. The author once saw the fluid entirely disappear in a case of cirrhotic ascites under the continued application of a plaster of mercurial ointment, and Murchison mentions a similar instance. Calo-

mel alone and with digitalis, blue pill, and squill and digitalis have been credited with great power in the removal of dropsies, but Cheadle does not believe them efficacious, as his experience, except in the one case referred to, has been very unsuccessful with them, even in syphilitic cases.

### THE TREATMENT OF TYPHOID FEVER BY BATHING.

SIHLER, of Cleveland, Ohio, contributes to the *Medical News* of November 19, 1892, an interesting paper upon this subject, and reaches the following conclusions:

- 1. Americans—women, children, and men alike—experience the same beneficial effects from the cool baths that European patients do.
- 2. In cases in which the baths fail to reduce the temperature of the patient, they should not be discontinued; they will still have a beneficial effect.
- .3. The prolonged lukewarm bath (from 90° to 96° F.), with gentle effusions of cool water (from three to four pails, of from 60° to 70° F.) to the head, is often an excellent remedy in case of great excitement and inability to sleep (delirium versatile).
- 4. Women take to the baths more kindly than men.
- 5. When the fever is very high and the elevation of temperature is marked soon after a bath, it is advisable to repeat the baths sooner than the formula requires (three hours), and to give them every two hours.
- 6. Even when patients have reached the third week, and with hemorrhages, baths and water more or less cool should be used according to the directions of Brand in the treatment of the "degenerated" cases. Parched, smooth, fissured tongues are unknown to the hydriatric treatment.
- 7. The method can be used in country practice.
- A few words of advice to those thinking of using the hydriatric method in private practice may not be out of place here.
- r. First of all get a bath-tub made. The author had one made six months before he had a case. His tubs are made of galvanized iron, with a strong rod around the rim, four-cornered, five and three-fourths feet long, two feet wide, and sixteen inches deep. If you have a tub you will use it, and if you have your tub, thermometers, etc., on hand, your natients will be under the impression that you

know all about the method. The writer's bathtubs are among the most useful of his instruments.

- 2. Be present during and after as many baths as possible, and especially at first; this both for the patient's sake, who will be encouraged, and for your own sake, who will be instructed.
- 3. As soon as possible instruct one or more suitable persons in the use of the method. Well-to-do persons will be glad to employ them, and even those less favorably situated can have a nurse, because not much money need be spent for drugs, and because the physician can restrict the number of visits if one of his trustworthy nurses is taking care of the patient. If the family wishes or is compelled to do its own nursing, you may send such a skilled person to the house for from twelve to twenty-four hours to give instructions in the use of the baths, thermometers, etc.
- 4. Do not propose the method in a half-hearted way. If you are convinced that Brand and his followers are in the right, tell your patients that you consider it your duty to use the method. If your patients are like the author's, not more than one in twenty will refuse to take the baths.
- 5. Let your first case be one that you can treat from the beginning, and treat accurately and strictly after Brand, so that both the community and yourself will not lose confidence in the method.
- 6. Follow the directions of Brand, Bouveret, and Vogl as closely as possible, and do not "improve" on the method before having used it for some time.

In the author's opinion, the physician who will use the hydriatric method will find nothing but gratitude on the part of the patient and his friends. In treating typhoid fever, he will become acquainted with the useful qualities of water as a remedy, and employ baths in other febrile diseases, such as scarlet fever, measles, pneumonia, etc., and he will thus be worth much more to his patients than he was before using the baths. He will find the hydriatric method not only satisfactory from the humanitarian stand-point, but he will also find it interesting from the stand-point of the scientific observer and physiologist. He will save the lives of some and shorten the sufferings of many.

"The physician, however, who has become convinced of the method and has not the courage to combat all obstacles, does not stand on the pinnacle of his profession" (Vogl).

Brand, Juergensen, Vogl, Glenard, Tripier, and Bouveret have made it so easy for us to carry out the hydriatric treatment that we merely have to follow their directions. And why should we not do so?

### NOTES ON AN ACCIDENT UNDER CHLOROFORM.

In the Lancet for October 1, 1892, LIEUTENANT-COLONEL LAWRIE reports the following cases:

Mukrum Khan, aged forty, a powerful Afghan Mohammedan male; disease, sinus; chloroformed at the Afzulgunj Hospital on August 19, 1892, by a student; full anæsthesia in two minutes and twenty-five seconds.

#### OBSERVATIONS.

H. M. S.
 8.42.20 Chloroform on cap; resisting and struggling very violently almost at once.

8.43.25 Stopped struggling; natural breathing.

8.43.30 Chloroform added to the cap; two breaths of air.

8.43.45 Respiration 28 a minute.

8.44.45 Over; cornea insensitive; cap removed.

8.45.05 Shallow breathing; jaw pushed forward.

8.45.25 Natural breathing; cornea sensitive; cap reapplied.

8.45.40 Stertorous breathing; cap removed and jaw pushed forward.

8.47.00 Cornea sensitive; cap reapplied. The cornea became insensitive almost immediately; the respiration became shallow again forthwith, and the jaw had to be pushed forward to relieve it.

8.49.00 Struggling; cornea sensitive; cap reapplied.

8.49.40 Over; cornea insensitive; cap removed.

8.50.00 Respiration becoming shallow; jaw pushed forward.

8.50.20 Respiration stopped. Dr. Lawrie at once jumped on to the table astride of the patient and performed artificial respiration by Howard's method; natural breathing recommenced after fifty-five seconds.

8.51.15 Artificial respiration stopped; jaw still kept forward.

8.52.00 Normal respiration; jaw let go.

8.53.30 Operation finished.

(The notes of this case were taken by Dr. Lawrie, and, after anæsthesia was complete, by a senior student.)

Remarks.—Immediately after the inhalation was commenced the patient struggled violently for more than a minute, and it required six or eight students to hold him on the table. Between 8 h. 45 m. and 8 h. 47 m. signs of respiratory failure occurred three times, consequently from 8 h. 47 m. no chloroform was given until 8 h. 49 m. The administration was then proceeded with, and was stopped directly the cornea became insensitive, at 8 h. 49 m. 40 s.

After the inhalation ceased the anæsthesia deepened. At 8 h. 50 m. the respiration began to fail, and it stopped altogether at 8 h. 50 m. 20 s. The patient became deathly pale, and it is probable that there was also reflex stoppage of the heart. Artificial respiration was performed for fifty-five seconds; he then took a natural breath, and gradually recovered. The accidental overdosing in this case emphasizes the rule that chloroform should never be administered during the irregular breathing which accompanies violent struggling. It was quite right to hold the patient down, but the chloroform ought not to have been given until he was quiet, and the respiration was regular and natural. The rationale of the overdosing is readily explained by the research of the Hyderabad Commission. The report of the Commission demonstrates that asphyxia renders the respiratory centre extremely susceptible to the action of chloroform; and Experiments 64 and 178 show how narcosis may be produced by residual chloroform in the system after the inhalation of the anæsthetic has been discontinued.

In Experiment 64 the administration of chloroform and electrical stimulation of both vagi were commenced simultaneously at 9 h. 14 m. 20 s., and the effect was to send the bloodpressure down suddenly almost to zero, and to arrest the circulation for nearly two minutes while free respiration continued. The air in the lungs was thus gradually charged with chloroform. When the inhalation of chloroform and stimulation of the vagi were stopped at 9 h. 16 m., the blood-pressure rose rapidly again, the circulation was resumed, and the chloroform in the lungs was forthwith taken up and conveyed to the nerve-centres. Narcosis was produced, and its effect is shown in the tracing by the fall of the blood-pressure, which commenced at 9 h. 16 m., and continued until the residual chloroform in the lungs had been got rid of. This experiment reduces what happened in our case to demonstration. Residual chloroform, which was present in the system owing to previous irregularity of the breathing, was conveyed to the nerve-centres, which became narcotized; the breathing entirely stopped, and but for prompt artificial respiration the narcosis would in all probability have terminated fatally.

In order to prove to my students that it was the method of administration which was at fault and not the chloroform, or any constitutional idiosyncrasy on the part of the patient, he was brought before the class again on the 21st instant, and the wound was dressed under chloroform. The following is the record of the second administration:

Mukrum Khan, Afghan Mohammedan male, aged forty; chloroformed at the Afzulgunj Hospital on August 21, 1892, by Dr. Lawrie; normal anæsthesia was produced in four minutes and thirty-five seconds; before the inhalation the heart was examined, and found to be healthy; the pulse, which, without my knowledge, was watched out of curiosity by Dr. Leaf, was slow, weak, and regular, and it did not vary in any appreciable degree throughout the inhalation or afterwards.

#### OBSERVATIONS.

н. м. s. 9.21.45 Chloroform on cap; blowing regularly; cap close. 9.22.30 Natural breathing.

9.22.50 Chloroform added to the cap; two breaths of

air. 9.23.05 Respiration 24 a minute; regular.

9.24.00 Respiration 20 a minute; regular.

9.24.08 Chloroform added to the cap; one breath of air. 9.24.40 Struggling; regular breathing; cap kept close.

9.25.15 Chloroform added to the cap; two breaths of air.

9.25.40 Snoring.

9.26.20 Over; cornea insensitive; cap removed.

9.35.40 Dressing finished.

The second administration helps to confirm the contention of the Hyderabad Commission that the respiratory centre is peculiarly susceptible to chloroform when it is asphyxiated. In the first administration the respiratory centre was accidentally partially asphyxiated, and full anæsthesia was promoted in two minutes and twenty-five seconds. In the second administration, though the chloroform was given in the same way, and the cap was held just as close to the patient's face as in the first, the breathing was natural and regular throughout, and anæsthesia was produced in four minutes and thirtyfive seconds. Finally, it is probable that the asphyxia, which occurred at the commencement of the inhalation, was a factor in the overdosing which took place in the first administration. I believe I am right in stating that Case 1433 constitutes the first reported instance of an accident under chloroform in which notes of all the events that occurred throughout the entire administration were recorded at the exact time of their occurrence.

### NOTE ON ETHER AS A MENSTRUUM IN MEDICATION BY THE SKIN.

SIR JAMES SAWYER (Pharmaceutical Journal and Transactions, October 15, 1892) especially invites attention of pharmacists to the advan-

tages of ether as a menstruum for the preparation of remedies which act through the skin. Experience has confirmed and extended his views of this drug since two years ago, when he first proposed this new use of ether. method indicates a practical advance in our remedial resources which promises further useful application both in human and in comparative therapeutics. Not every officinal compound "for outward application only" can be accredited with percutaneous energy. Until ethereal tinctures and liniments were used, we were accustomed in medical practice to present many remedies and many different preparations to the skin, with the view of producing remote or local effects, or both, in the form of compounds very ill designed for their special

The officinal formulæ of outward applications include emplastra, various liniments of alcoholic, saponaceous, or ofeaginous composition, and certain fatty unguents. Of these medicaments for enepidermic use the oily liniments and the ointments, because of their easy admixture with the sebaceous secretion of the human skin, are probably the most active. It is probable the structure of none of the fourteen plasters of the British Pharmacopæia is such as to permit the absorption of their active ingredients by the skin. The body of an officinal plaster is made of litharge in union with oleic, margaric, and stearic acids, or of wax, of lard, of frankincense, of resin, of soap, of suet, and of some fixed oils, in various combinations. "Neither a plaster so formed," as Sawyer writes in his former papers upon this subject, "nor a solution in alcohol of the active principles of drugs is a scientific medicament for enepidermic employment and percutaneous action, if we have regard to the structure and physiology of the human skin." In practice it is found that there are at least three separate obstacles to the absorption of a medicine through the skin,-namely, the fatty sebaceous secretion of the skin, the epidermis, and insolubility of the So far as the author knows, ether is the best menstruum for the solution of many remedies for local use through the skin. It is a good solvent of the active principles of many drugs, and it is a ready solvent of the fatty constituents of the sebaceous secretion of the skin. An ethereal liniment supplies the most intimate application of a remedy to the bare dermal sur-

Dr. Lauder Brunton has written, "It would appear that the fat of the skin, as well as the epidermis, presents an obstacle to the absorption of substances in solution; but when

they are applied in such a form that they can readily mix with the sebaceous matter of the skin, they are tolerably readily absorbed; as, for example, when they are used in the form of ointment. . . . They are absorbed also when dissolved in ether, and especially in chloroform, even when simply painted over the surface. Alcoholic solutions are not absorbed when painted in this way." Chloroform has many disadvantages, but ether is an excellent agent for use either as a menstruum, in tinctures for external employment, or as a simple solvent for the preparation of a liniment.

Sir James Sawyer has proposed and used several ethereal tinctures for dermal employment,—namely, of belladonna (tinct. bellad. ætherea), of capsicum, of iodine, and of menthol. It is probable that physicians and pharmacists will find other useful developments of ethereal preparations as remedies applied to the skin.

#### THE PRESCRIBING OF PRISMS.

DR. ERNEST F. MADDOX (Ophthalmic Review, February, 1893) contributes an article upon this subject, containing such clear directions in regard to his views on the method of prescribing prisms, that it is reproduced in its entirety:

Much discredit is likely to be thrown upon prisms if they are prescribed too promiscuously. In their own sphere they are of great value, but outside it they will of course cause disappoint-He should be sorry to see the glass-rod test so misapplied as to be considered in itself an infallible guide to prisms. It is a perfectly reliable and delicate test for one symptom,viz., the latent equilibrium of the eyes for the distance at which the test is made. Were our vision always for a distance of five metres in daily life, or for any other invariable distance, the rod test would give us the exact strength of prism which it would be advisable to wear when muscular asthenopia is complained of. But since we are concerned with vision for all distances, we have to take into account, and make a study of, the great function of convergence. may do this by a series of three or four tests, beginning with the simplest and quickest, and dispensing with the latter ones if they appear unnecessary.

The first test is the familiar one of approaching the finger towards the root of the nose till one eye diverges, fixing the patient's attention upon the finger-nail all the while as strongly as we can. The test is far from a perfect one, but

it is so readily made that it should never be omitted. The distance at which the effort to converge is given up indicates the near point of convergence, not so strictly as the dynamometer, but sufficiently for our purpose. In practice one gets into the way of judging as much by the appearance of convergence in the two eyeballs as by the distance of the finger, and this is really a good habit, for the finger may often pass far within the near point of convergence before the effort to converge is given up in sufficient measure to become apparent to an observer. It is well, therefore, to cultivate the habit of observing how much appearance of convergence we should be able to impart to normal eyes.

After approaching the finger within a certain distance, one eye rotates outward, while the other still remains directed to the finger. This is due to the abandonment of the converging effort as soon as the impossibility of converging for so close an object is realized. Though the eye which deviates has perhaps less distinct vision for the finger, it must not, of course, be supposed that the diverging eye has necessarily a weaker internal rectus than the other, nor that the test is one which estimates the strength of the internal recti. It is the function of convergence which we are testing, and that only. The result informs us as to the "near point of convergence." In normal subjects it can easily be shown that, by making both eyes move to the right, or both to the left, a much greater adduction can be imparted to either eye than is possible by approaching a finger straight towards the root of the nose. Indeed, in the latter case there may be no convergence at all, while perfect movements of both eyes together to the right or left are demonstrable. These simple facts are familiar, but they cannot be repeated too often, as one still sometimes hears "insufficiency of the internal recti" spoken of, instead of "insufficiency of convergence."

By combining in our minds the greatest apparent convergence in the eyeballs that we are able to produce, and the distance from them of the point at which one eye rolls outward, we can form a very fair estimate of the positive converging power of the individual. If the converging power is manifestly defective, we proceed to test the latent conditions of equilibrium for distant and near vision by the "rod test" or the "card test" respectively, or, if these are not available, we may do the best we can with the ordinary "cover test." In this latter we should cover an eye with the hand for at least half a minute before removing

the hand to notice the amount of readjusting movement that takes place in the eye when restored to vision. By carefully-timed experiments he has found that in his own case an eye excluded from vision begins to deviate in less than half a second, and does not appear completely to cease deviating for half a minute. By far the largest part of the deviation, however, has taken place in from five to ten seconds, so that when a quantitative estimate is not desired, a quick observation can be made.

The "cover test" should be made first with the patient fixing a distant object, and then fixing a near one, such as the finger-nail at ten or twelve inches, or, as suggested by Hansen Grut, a printed letter or small piece of printed paper on the finger-end. If the rod and card tests are available, the cover test can be dispensed with, since it needs much more skill and gives very inferior results.

The rod test need not be again described. The best form for use is a series of small glass rods about an inch long, arranged parallel to each other, and in close contact. Any one can make this for himself by breaking up a long glass rod of about one-eighth of an inch in diameter into short pieces of equal length, laying them side by side on a hard surface, such as a marble mantel-piece, to get them perfectly level, and then fixing their ends with sealing-wax. The advantage of this form is the ease with which it is held opposite the patient's pupil, for one of the rods must be in front of it. By using this arrangement of rods even the stars can be made to yield delicate lines, though for this purpose it is best to collect as much of their feeble light as possible by using a plano-convex cylinder with a radius of curvature of twenty millimetres. By its means exquisitely delicate lines are produced, of great beauty. The results are practically the same as with vision for six metres. Of course stars are not clinically available, and he mentions the fact for the sake of interest only.

Having made the "finger test" and the "rod test," we next proceed to make the "card test." This, too, has been described elsewhere, so that much need not be said about it. At reading distance, divergence of 3° or 4° is the usual latent deviation under physiological conditions, though not quite invariably so. As we look farther and farther away the divergence becomes less, till at six metres it is generally inconsiderable, and in many cases it gives way to slight convergence long before that distance has been reached.

He once thought that the latter condition—i.e., latent convergence in distant vision—was the rule, but his earliest experiments, by a difficult method, had to be made on too limited a number of subjects, and later investigations by the more rapid rod test, made in Mr. Berry's clinic, at his request, showed that slight latent convergence at six metres is rarer in emmetropes than slight latent divergence.

The conditions which he formerly described in *near* vision, however, and the gradual diminution of the near latent divergence as vision recedes, have been amply confirmed by later methods.

The "card test" can be made for use at various distances,—e.g., 1 metre, .5 metre, .33 metre, or .25 metre,—but for practical purposes .25 metre is perhaps the most convenient distance. A card printed with a single vertical arrow, the foot of which rests on a horizontal row of figures, representing degrees at the distance of the test, is obtainable. It is well to fasten to the card a piece of thread .25 metre long to hold it at the proper distance. It is then duplicated by a vertical prism of 12° (6° D.) before one eye, when the point of the lowest arrow will point up to the figure expressing the degree of duration.

He has generally been satisfied with the three tests,-the "finger," "rod," and "card" tests, -without proceeding to the fourth, which was suggested on pp. 90 and 94 of his book on "Prisms,"—viz., the "relative range, with vision for occupation distance." By "relative range of convergence" is meant the extent to which convergence can be artificially increased or relaxed while accommodation remains the same, being maintained, as during the patient's daily occupation, for some object at a definite distance. The greatest obtainable excess of convergence constitutes the positive part of the range, and the greatest possible diminution constitutes the negative part of the range. The positive range we measure by finding the strongest adducting prism that can be worn without destroying single and distinct vision of the object looked at, and the negative range by the strongest abducting prism that will fulfil the same conditions. It is, of course, necessary to see that the object remains distinct as well as single, for it sometimes happens, especially if double-revolving prisms be used, that a patient will surrender his accommodation to retain his singleness of vision, rather than surrender his singleness of vision to retain his accommodation.

He gave this test a place in his book, in an ideal investigation, only second in importance

to the absolute convergence, and theoretically it is an admirable test. It takes time, however, and some intelligence in the patient, so that he would now reserve it only for unusual and important cases. It is well to depend mostly on rapid tests, and we are then less tempted to omit them if pressed for time. Dr. Percival, however, has taken up this test, and seems to prefer it to the others. Dr. Maddox will be glad if he can increase its usefulness, as he has endeavored to do so by seeking to establish an "area of comfort." The idea is a good one and worth working out. He suggests, however, as a working hypothesis, that the area of comfort corresponds to the middle third of the relative range. To put this in language which some will perhaps understand better, if the highest adducting prism compatible with single distinct vision of an object be more than twice the strength of the highest abducting prism, or vice versa, the "area of comfort" is transgressed, and relief will be afforded by prescribing prisms.

Dr. Percival's rule might perhaps hold good for near vision, but for distant vision it will certainly need alteration, for normal individuals overcome adducting prisms, with great ease, of more than twice the strength of the highest abducting prism they can tolerate. So that, were this rule true, all these would be in discomfort. Dr. Maddox, for instance, can only just overcome a prism of 6° (3° D.) with its base in, while he can easily overcome one of 22° (11° D.) with its base out, in negative accommodation.

He thinks, however, that Dr. Percival's idea of an "area of comfort" is a good one, and only needs working out more thoroughly. In practice, it is best to work on as few rules as possible, so as to take a broad view of each case. The "area of comfort," for instance, in a healthy man would be enormously greater than in a neurasthenic, and no rule could be made to hold good for both.

In prescribing prisms he would recommend the following maxims: 1. Never order them unless the indications for their use are unmistakable. 2. Never order them simply on account of an anomaly in the behavior of the eyes under various tests, unless there is asthenopia, headache, tendency to diplopia, or giddiness, possibly relievable by them. 3. Do not judge by one test, but by the "finger," "rod," and "card" tests, and, if specially indicated, the "relative convergence" test also. 4. Remember that considerable latent deviation in distant vision is more important than in near vision (though the latter is not to be ignored),

and that moderate divergence in near vision is physiological. 5. Always more or less undercorrect with prisms.

It will, he thinks, be evident from what he has said that the rod test was never meant by itself to be an exact guide to prescribing prisms. It contributes its own evidence well and trustily, but other evidence has to be gathered also, and every case treated on the principles of common sense, and under the guidance of an intelligent grasp of the physiology of the subject.

But while all this is true of deviations on the horizontal plane, there is a sphere in which the rod test alone does form a reliable indication of the strength of prism required. He refers to vertical deviations, for in them there is no converging function to complicate matters, and latent vertical deviations (hyperphoriæ) remain much the same in amount whatever be the distance of vision. It is true they are rare, though not so rare as they are thought to be, and their correction is often extremely satisfactory. Slight latent vertical deviations cause far more trouble than slight horizontal ones. It is desirable, when possible, to test them more than once to see if they are constant, and it is surprising how often after years have elapsed they are present to the same degree as before.

Hyperphoria may be divided into two great classes,—the simple and the paretic. Simple hyperphoria is much the commoner in his experience; in it the degree of vertical deviation remains unchanged, whether the eyes are directed downward or upward. It answers, in fact, to concomitant strabismus, and it is impossible to tell whether the fault is due to a deviation of one eye upward or of the other eye downward. In paretic hyperphoria the latent deviation is greater in some directions than in others, and by using the rod test it is easy to discover which eye is at fault and which muscle is affected.

Paretic cases are not so suitable for prisms, for they tend to recovery of themselves, though sometimes partial correction by temporary prisms may give satisfaction for a time.

The highest degree of hyperphoria he has seen was 10° in a young man of robust health, about to leave school. He had no headache with it, perhaps accounted for by the fact that he had not only had it from infancy, as evidenced by the occasional rolling up of one eye, but also that his grandmother was liable at times to a rolling up of the eye of the corresponding side. With hereditary transmission of the defect there was also probably transmitted a toleration of the same.

The *smallest* hyperphoria he has seen causing headache and discomfort in vision, relieved by prisms, was 1°. The hyperphoria was simple and not paretic, was of exactly the same degree on two different examinations, and the refractive correction of each eye was +.5 D. sph.; +.25 D. cyl. She complained also of occasional diplopia and frequent threatening of diplopia, and the interesting piece of history was elicited that even when a girl she could never combine the two pictures in a stereoscope, but always saw them partly superposed. It is more than probable that this hyperphoria had existed most of her life, but had only come to give her trouble during the last few months from diminished power of overcoming it. Perhaps this may also explain the case of an old gentleman with right hyperphoria of 5°, the symptoms of which had only troubled him for the last few months. It is difficult to conceive how such a latent deviation could suddenly develop, as there was no paretic element in it. It is possible that he, too, may have had it through life without causing him any trouble till the power of overcoming it was reduced. What makes it still more probable that its existence was of long standing is that it caused no headache or asthenopia, but only bewilderment from a want of fixity in vision, and frequent threatening of double vision. Prisms of 4° (2° D.) before each eye removed these symptoms and made objects appear solid and stable.

The persistency of hyperphoria is very remarkable. In a doctor of his acquaintance he noted at two separate times, so far apart as two years, a persistent hyperphoria of exactly 1½°. The headache from which he has suffered for many years is very likely connected with it, but Dr. Maddox has not yet prevailed on him to try prisms. He has also .5 D. of hypermetropia.

In true hyperphoria one eye turns up when it is covered as much as the other turns down when it is covered. In Mr. Berry's clinic they have noticed some rare aberrant forms of hyperphoria in which one eye turns up without the other turning down, or in which either eye turns up when covered. These are, of course, not the cases for prisms.

Prisms to correct hyperphoria should, of course, be equally divided between the two eyes, and should be edge up before the eye that deviates upward and edge down before the other eye. A practical point about prisms is that they are tolerated of greater strength when vision is imperfect, as from corneal nebulæ, or in an unobservant patient.

# SIMPLE METHOD OF OPERATING FOR PARTIAL TENOTOMY OF THE RECTI MUSCLES (GRADUATED TENOTOMY).

DR. EUGENE SMITH (Archives of Ophthal-mology, January, 1893), on the basis of several years' experience in the following simple manner of making partial tenotomy of the recti muscles in heterophoria, gives it to the profession with the remark that it is as effective as it is easy.

The instruments required are an ordinary stop speculum, a small triangular knife, the stop keratome of De Wecker, and a peculiar ring forceps, each branch of which ends in a sharp hook. When closed the forceps form a small ring at the points. Under cocainization the eyelids are held open with the speculum, the belly of the muscle is seized at the equator of the eye, while the patient looks in the direction opposite to the muscle to be operated on, -that is, inward, if the external rectus is to be The full width of the muscle and the conjunctiva over it are seized with the forceps, the sharp points of which pierce the conjunctiva and grasp the muscle, holding it securely in the ring. The muscle is then drawn away from the eyeball in such a manner as to put the tendon on the stretch, while the point of the triangular knife is pushed through the conjunctiva and centre of the tendon at its attachment to the sclera. If, in the judgment of the operator, the division of the tendon made by the forward movement of the knife is deemed insufficient, or found to be so on testing, the muscle is again seized with the forceps, the knife again entered at the same wound in the conjunctiva, and by lateral movements the tenotomy is enlarged. The small wound in the conjunctiva usually closes by its own elasticity, the bleeding or effusion beneath the conjunctiva is slight, and seldom does overcorrection occur. No dressing is required.

### FURTHER COMMUNICATION ON THE TREATMENT OF TRACHOMA.

H. Knapp (Archives of Ophthalmology, January, 1893) communicates a second paper on his method of treating trachoma chiefly with the roller forceps which he has devised. The mode of operation remains the same as he originally described it in the Archives of Ophthalmology for January, 1892.

In all severer cases of trachoma he uses general anæsthesia, for the operation is tedious and the success depends on its thoroughness. All the soft trachomatous material should be pressed

out from every portion of the conjunctiva in which it is deposited, visible or invisible. This can be done at the commissures and caruncle as well as in the tarsal and retro-tarsal portions. The roller must pass repeatedly over each place to secure the complete liberation of the trachoma substance. This substance being soft and gelatinous, it will come out by a pressure that does not interfere with the integrity of the cellular and fibrous elements of the conjunctiva. There is commonly free hemorrhage, which seems to be rather an advantage than a drawback as to the recovery. In no case has he seen sloughing or ulceration of the conjunctiva. ruptures of the surface of the conjunctiva occur, of course, whether we scarify this membrane or The next day the posterior part of the palpebral conjunctiva is agglutinated to the reflex fold in many cases, and the advice is given to solve these adhesions with a probe. He has done this also at the beginning, but has found it of no importance, for these agglutinations disappear with the swelling and the fibrinous deposit of the conjunctiva. Where portions were cut off, adhesions and shortenings were permanent.

The indications for the expression treatment are contained in the following sentence: Expression is indicated only where trachomatous substance can be pressed out.

In the first place are those cases in which spawn-like granulations are deposited in the conjunctiva without inflammatory irritation, the cases of pure, non-inflammatory, follicular trachoma. This variety of trachoma is not infrequently limited to one eye, and he doubts very much whether it is contagious. He is inclined to consider it as an analogue of the adenoid or follicular hypertrophies of the naso-pharynx. They occur, as the latter, mostly in youth, rarely under five years or over twenty. He has no experience of their spontaneous disappearance without producing atrophy of the conjunctiva, but does not doubt it. Expression cures the great majority of them without any other treatment, but it alone does not cure them all. A small number return with relapses, usually mild ones, which are speedily cured by another expression. A few are made worse by expression,—i.e., the apparently pure, non-irritative, follicular trachoma is, by the mechanical treatment, converted into the inflammatory form of trachoma. The mucous membrane swells, burns, pains, secretes, and in the course of weeks becomes again the seat of miliary or spawn-like granulations, just as we see this deposition occur in the course of acute catarrhal conjunctivitis. He has noticed five such cases. The primary treatment of this in-

ordinate reaction should be—as in the period of reaction in every case of expression—purely antiphlogistic: bathing the lids with cold water and washing the conjunctival sac out with a mild antiseptic solution. When the reaction is over, and the conjunctiva remains swollen and uneven,—the so-called papillary hypertrophy,—nitrate of silver (one-per-cent. solution) is of advantage; and when the spawn-like granulations have developed, and the conjunctiva is not much swollen, the rolling should be repeated. Of late he has mostly used the sulphate of copper crystal as after-treatment, until the conjunctiva was smooth and completely free from granulations.

The second class of trachoma, which may be designated as secondary, consecutive, inflammatory, or complicated trachoma, comprises those cases in which the deposition of granules is preceded, accompanied, or succeeded by some form of conjunctivitis, commonly catarrhal or blennorrhoic in its nature. These cases are contagious (perhaps from the microbes of the original or complicating conjunctivitis) and destructive, producing shrinkage of the conjunctiva and corneal ulceration. Mostly both eyes are affected. This vast class of cases, which are chronic, with a marked tendency to relapses, is not cured by expression alone, yet it is greatly benefited by it. As long as there is hyaline infiltration, either granular or diffuse, this should be pressed out. He scarifies such eyelids rather deeply, presses the liquid and soft material out, and rubs a solution of bichloride of mercury (1 to 500) into the tissue with a pellet of absorbent cotton or a tooth-brush, the grattage of Darier and others. This treatment is based on mechanical and germicidal principles, according to generally-accepted theories. The results have, of course, not been so brilliant as in the non-inflammatory, follicular trachoma, yet the treatment has abridged the recovery essentially, and in many cases also put a stop to the progressive destruction of conjunctival and corneal tissue. This surely is an immense advantage. He has not seen that corneal ulceration or pannus has been made worse by this kind of treatment. It is not infrequent to see the ulcerous or pannous cornea become somewhat more opaque during the period of reaction from the mechanical and caustic treatment, but the increase of the opacity disappeared quickly in all cases that have come under his notice, and the corneæ afterwards became clearer than they were before the operation.

A third form of trachomatous disease, which he has seen on the upper lids only, and he

would call sclerosing trachoma, are those tough excrescences which are most obstinate, and when once fully developed resist all kinds of treatment. Cases which he has watched from the beginning show in their initial stage the ordinary, rather vascular, lid granules. The copper crystal does not affect them, or rather favors their growth. In the course of months and years they multiply and cover the upper tarsal and retro-tarsal conjunctiva in the shape of irregular, hard, red excrescences, flattened on their surface by the thickened and heavy lid. Some of them can be raised with a probe, when they exhibit a pedicle and a mushroomlike, often notched, and lobulated head. Cut off with scissors, they feel tough, and show under the microscope an irregular structure of dense fibrous tissue surrounded with vascular epithelium. In their further course they become pale, and ultimately completely white. The everted lid looks like a section of a dense fibroma. The disease lasts years, has no great tendency to affect the cornea, resembles in a certain stage the pale, tessellated tarsal conjunctiva of Saemisch's spring catarrh, but never shows the circumcorneal thickening. Strong remedies make it worse; mild washes, in particular a 1 to 5000 solution of bichloride of mercury brushed over the inner surface of the upper lid five or six times daily, seem to do good. The disease may be, and, as far as he knows, usually is, recovered from without great roughness of the conjunctiva or damage to the cornea.

Summing up the RESULTS of the treatment sketched above, they are as follows:

- 1. Rapid, perfect, and permanent recovery by expression alone, or expression followed by a course of mild caustic treatment, takes place in the majority of cases. This refers chiefly to the cases of pure follicular trachoma.
- 2. Imperfect recovery—i.e., disappearance of trachoma, but leaving more or less shrinkage of the conjunctiva—is the common issue of old, neglected cases of inflammatory trachoma.
- 3. Relapses occur of both simple and inflammatory trachoma. They have been recorded in ten cases of the first series and in eight of the second. The majority of patients come back with a relapse, after having felt comfortable and done nothing for their eyes, many months after the operation. The relapses were most promptly cured by a second expression; in a few cases a third was necessary. In two cases the steady, after-treatment with the copper crystal did not prevent a relapse. They had been treated as out-patients and worked in a dusty atmosphere.

4. The operation itself has neither destroyed nor injured an eye.

In conclusion, he states that the mechanical treatment, with or without scarification and impregnation of the lid with corrosive sublimate, does not cure all cases of trachoma, but it benefits and cures the great majority, and always abridges the recovery. In rare instances it converts a simple trachoma temporarily into an inflammatory trachoma, but injures no case permanently.

#### KERATO-MALACIA IN YOUNG CHILDREN.

MR. HOLMES SPICER (Ophthalmic Review, January, 1893) refers to the fact that young children are more liable than adults to gangrene of the cornea when their vitality is reduced below a certain level. The gangrene may occur spontaneously, or as the result of slight attacks of conjunctivitis. In the late stages of tuberculous meningitis and in infantile diarrhœa the cornea undergoes destruction, but this is due partly to exposure and partly to insensibility. After measles or whooping-cough with bronchitis, and in malignant varicella, where there has been much exhaustion, the cornea is not infrequently seriously damaged by large perforating ulcers. After serious malnutrition the cornea may slough spontaneously; this is not uncommon among nurslings in countries where the mothers practise long religious fasts; in this country it is rare, except among the hand-reared who have had insufficient nitrogenous diet. Kerato-malacia generally attacks both eyes of children from four to nine months old; it begins with dryness of the conjunctiva, with patches of froth on its surface, and with night-blindness; soon the whole cornea becomes opaque and perforation occurs; the cases often terminate fatally.

The treatment should be increase of the nitrogenous elements of food, some meat juice or raw meat finely pounded, in addition to milk for young babies, and cod-liver oil; and locally, eserine in the form of ointment to the eye, with warm applications to the lids. Some of the cases with this treatment made a good recovery; in one case the cornea recovered, although the child succumbed eventually.

THE EMPLOYMENT OF OIL OF TAMA-QUARY IN CORNEAL AFFECTIONS.

M. MELLO VIANNA (A Medicina Contemporania, October, 1892; abstract Annales d' Oculistique, January, 1893) has studied in detail the chemical composition, the pharmacology,

and the physiological properties of the oil of tamaquary, derived from a tree in the Amazon province, belonging to the family of Ternstroèmias. He recalls the fact that this substance was first used in ophthalmology by Moura Brazil in 1883. Since then it has been used experimentally in De Wecker's clinic. Vianna, resuming this study, has used tamaquary oil in all affections of the cornea, and, without going into the details of the forms of keratitis thus treated, it may be said that his results are worthy of attracting the attention of lovers of new therapeutic proceedings. According to him, all kinds of keratitis, except, perhaps, interstitial keratitis, are advantageously affected by this medicament, but its action is especially efficacious in phlyctenular keratitis. Out of a series of seventy-eight cases of this affection, the author had seventy-eight recoveries. The following is the formula which he uses:

> White vaseline, 10 grammes; Tamaquary oil, .40 gramme.

A few particles of this salve are applied directly to the cornea, and then the upper lid is rubbed slightly over the surface. The local treatment must never cause general medication to be neglected.

#### EXTRACTION OF CATARACT BY A SEMI-ELLIPTICAL SECTION WITHOUT IRIDECTOMY,

GALEZOWSKI (Recueil d' Ophthalmologie, December, 1892) discusses the three principal points of the operation,—namely, the shape and extent of the section, the incision of the capsule, and the expulsion of the cataract. As he has shown in his first article, the shape of the section must be semi-elliptical, the puncture and counter-puncture being made in the sclerotic edge, just at the limit of the opaque portion of the cornea, so that these punctures are very regularly placed, and at a fixed and well-defined height.

Drawing an imaginary horizontal line in the direction of the base of the Daviel section and another across the incision of the Graefe section, he makes his puncture and counterpuncture exactly at an equal distance from these two lines. After making the puncture in the sclerotic edge at the point designated, he performs section of the capsule with the point of the knife, passing rapidly towards the opposite edge of the cornea to make the counterpuncture. He then shapes the section in a semi-elliptical form. This section must have

its apex, like Daviel's, two millimetres from the superior edge of the cornea. The limits of the section must be designated in advance. The spot where the puncture and counterpuncture are to be made must be exactly indicated, and the place of the apex of the section must be marked, for it is not to be forgotten that it is the basis of the whole operation, and any transgression of this rule may cause failure in the result, lead to complications in the execution, and render the performance of the method difficult.

The incision of the capsule with the knife is not obligatory. It is easily made if the anterior chamber is large, and if the cataract is not soft; otherwise it can be made in the second stage of the operation. It is indispensable to give the knife an oblique inclination from back to front as soon as the counter-puncture has been made, and terminate the incision of the section by drawing the edge of the knife forward. By proceeding in this manner one avoids wounding the iris, which might at this point in the operation be projected upon the knife.

After the first portion of the operation is finished, it is indispensable to withdraw the blepharostat and to effect expulsion of the cataract by depressing the inferior eyelid with the thumb of the left hand, and by raising the superior eyelid with the third finger of the right hand. In making pressure through the inferior eyelid on the globe of the eye, the crystalline lens is pushed towards the wound, while the edges of the latter are separated by means of a spatula supported on the globe of the eye above the wound. During the expulsion of the crystalline lens the pressure on the globe must not be arrested until all the cortical layers have been pushed out; not until then can the iris be returned to the anterior chamber by means of a blunt probe. By this manœuvre it is sought to detach the iris from the two angles of the wound; otherwise one would run the risk of having an inclosure of this membrane and consequent iritis.

If the crystalline lens is very large, or if it is difficult to expel it from the pupil, the operator should not hesitate to excise the iris sphincter, or merely to perform sphincterotomy. The iris is seized with a fine pincers and the pupillary iris is split. When the crystalline lens is expelled, the two sections of the iris wound are compressed into the anterior chamber and the dressing is made. In these cases the eye heals readily, and the chances of iritis are less to be feared than under other circumstances.

The operation for cataract without iridec-

tomy must be reserved for hard, total, or partial cataracts which have no complications, either in the constitution of the individual or in the condition of the internal membranes of the eye. In all choroidal and traumatic cataracts, and in all those which are developed in diabetic, albuminuric, or nervous individuals, and in children's cataracts, extraction with iridectomy ought to be performed, either by placing the Graefe corneal section on a peripheral line, or by simply shaping a Galezowski semi-elliptical section. After the operation is finished it is indispensable to instil several drops of eserine collyrium into the eye to contract the pupil strongly. This prevents projection of the iris into the wound and its consequent hernia.

To avoid secondary cataracts, Galezowski recommends a complete cleansing of the posterior chamber and of the pupillary space by means of a curette; but if, in spite of these precautions, secondary cataract begins to form, its absorption should be facilitated by antiphlogistic treatment and preparations of belladonna. A second operation must not be The experience of Galeperformed too soon. zowski is that one should wait six months, a year, or even more, before attempting a second operation by discission or extraction of the capsule. The corneal wound may be a long time in healing, although generally the cure is complete at the end of ten or twelve days. are cases in which, in spite of good coaptation of the edges of the corneal incision, the latter allows the aqueous humor to filter through, and cicatrization is not accomplished for fifteen, twenty, or twenty-five days.

### PTERYGIUM AND THE OPERATION FOR CATARACT.

DR. A. TROUSSEAU (Annales d'Oculistique, January, 1893), writing concerning the combination of cataract and pterygium, states that since Poncet described numerous bacteria beneath the apex of the pterygium, many authors have concluded that a corneal section was in danger of infection if performed on an eye on which a pterygium was growing. He refers to the fact that Noyes recommends performing the operation for cataract after the removal of pterygium, and that recently Würdemann (for abstract of Würdemann's article, see Therapeutic Gazette, December 15, 1892, page 843) wished to apply this precaution of removing pterygia to every ocular operation.

He thinks, however, that it is doubtful if the presence of pterygium is sufficient to cause

trouble, and points out the fact that, under many circumstances, particularly among the working-classes, the necessity of a double operation—one comprising removal of the pterygium, which necessitates considerable delay before the extraction of the cataract can be made—is a matter of the most serious consideration; hence it is important to find out whether the belief in the danger of pterygium is well founded. He refers to the fact that the bacteria which have been described in connection with pterygium are of very indefinite powers and have never been properly isolated, and consequently he determined to perform an operation for cataract in spite of the presence of this type of conjunctival growth. If necessary, he would make the section of the cornea a little oblique, so as to be above the superior edge of the ptervgium. He has performed the operation fifteen times under such circumstances, having only two accidents. In one there was hernia of the iris and in the other delay in the union of the corneal wound, accidents which might just as well have happened if the ptervgia had not been present. He states further that his colleague, Valude, does not hesitate to operate for cataract in the presence of pterygium.

### ESERINE IN THE TREATMENT OF GLAUCOMA.

Königstein (Wiener Medizinische Blätter, No. 2, January, 1893), discussing the indications for the use of myotics in glaucoma, writes:

- r. In the prodromal stage eserine tends to abort the attack. If a drop of the myotic is instilled into the patient's eye at the beginning of the symptoms, the attack will pass off in a short time, and thus the passage from the prodromal to the directly glaucomatous condition can be prevented, or at least deferred. One must not depend, however, too much upon this, and if there is danger of progress in the symptoms, surgical intervention is necessitated.
- 2. During the acute inflammatory stage eserine is instilled to lower the tension, to relieve the suffering, and temporarily to dissipate the attack, if for any reason operation must be deferred.
- 3. The application of eserine is further indicated as a preparation for the operation. The dilated pupil is contracted, the surface of the iris enlarged, and the technique of the operation facilitated. Moreover, it gives the best indication of what portion of the iris to excise, as well as pointing out which portions of the

iris are atrophied, by virtue of the fact that these areas are not influenced by the myotic action.

#### OCULAR OPERATIONS PERFORMED IN THE OPHTHALMIC SERVICE OF THE VENETIAN HOSPITAL.

M. Gossetti (Annales d'Oculistique, January, 1893) analyzes four hundred and eightyeight operations, and the following résumé contains the most important points:

Cataract.—The author has never abandoned the superior corneal section combined with iridectomy. Among one hundred operations only one panophthalmitis developed, and that was in a young woman who had serious renal disease. According to this author, real antisepsis is not possible in ocular surgery, inasmuch as the solutions which ought to be used would be much too strong and too irritating for the eye. He uses a sublimate solution (1 to 3000), which he thinks is quite strong enough for an antiseptic. [It is much stronger than necessary.—Ed.] Intraocular irrigations are a complication of the operation, and the author declares himself opposed to their application.

Total Staphyloma.—He practises resection of the staphyloma at its base, not followed by a suture. The bandage is changed after five days, but the eye is not opened until the seventh or tenth day.

Sympathetic Ophthalmitis.—There is one remarkable observation of a boy of eight years attacked with serious sympathetic ophthalmitis, soon followed by cyclitis. A subconjunctival injection of sublimate and another made twelve days later controlled the disease. In consequence of imprudence, there was a relapse, which was controlled by a third injection.

#### A NEW METHOD OF MANIPULATION FOR REPLACEMENT OF THE DISLO-CATED LOWER JAW.

ROTH (Lancet, No. 3626, 1893) describes the following method of reducing luxation of the lower jaw:

The patient is seated in an ordinary canebottomed chair; the operator stands before him with one foot placed slightly to the right side and the other just in front of the patient and in the middle line. The operator is thus on a firm basis, with the legs well apart and fully extended. He then flexes himself at the hips, and asks the patient to lean forward and to place his forehead in the middle of the sternum of the operator's chest (but this position varies with the size of the patient's head).

The operator now flexes his head so that his chin grips the patient's head about the upper part of the occipital bone; he thus acquires a firm hold, and has the head well under control between his chin and chest. The thumbs, protected in the usual manner, are placed in the patient's mouth, and the fingers of both hands grasp the lower jaw. In this position reduction is facilitated, and the advantages over the ordinary methods are as follows: 1, the operator has the head under perfect control and perfectly fixed; 2, the line of force exerted by the operator's hands acts in the same line as the resisting force exerted by the operator's chin; 3, the operator's elbows being well flexed, he can exert a greater power by the force acting through the thumbs being close to the shoulders, and it will be found that he has greater power of muscular action in the terminal phalanges of the same; 4, the patient's head is also in a better position for replacing a dislocated jaw; 5, the operator needs no assistant, and does not inconvenience his patient by the excessive pushing and pulling about of the head during the reduction.

#### TREATMENT OF HEMORRHOIDS.

Rossolo (Annales d'Orthopédie, tome vi., 7 année, No. 2) warmly recommends chrysarobin in the form of a suppository in the treatment of hemorrhoids. The suppository is made up as follows:

R. Chrysarobin, gr. i;
Coca-butter, gr. xxx;
Iodoform, gr. ½;
Extract of belladonna, gr. ½;

This treatment is also advocated by Macdonald, who reports the cure of a most obstinate case in fourteen days.

#### A NEW AND SAFE METHOD OF CUTTING ŒSOPHAGEAL STRICTURES.

ABBE (New York Medical Record, vol. xliii., No. 8, 1893) states that dense cicatricial contractions of the esophagus following burns by caustics or acids are usually located in the upper and lower segments of the tube, and that the symptoms from obstruction do not come on for many weeks or months after the accident. Hence when the surgeon is called in there is usually an extreme degree of narrowing, the treatment of which by dilatation with small-pointed bougies is often not only a matter of great difficulty, but fraught with grave danger of rupture through the soft and di-

lated wall of the tube above the site of trouble. Moreover, there comes a time when a small quantity of milk can pass through, but the strictures are utterly impassable to even the smallest whalebone bougies. In such cases the dense cicatricial tissue can be split through an esophageal opening, or the stricture may be divided within by passing a concealed knife on a flexible stem from the mouth down to the seat of trouble, or the stomach may be opened and bougies or a knife may be passed from below.

External œsophagotomy can apply only to strictures high up in the neck. An internal œsophagotomy is much more dangerous. The œsophagus is in close proximity to the aorta, the trachea, the thyroid artery, the recurrent laryngeal nerve, and many large veins. The exact thickness of the dense cicatrix cannot be calculated, and a knife which may be exposed to divide only two millimetres may cut through to the cellular layer outside the tube and divide one of the vital parts just mentioned.

Accumulated experience makes it seem probable that in the majority of œsophageal strictures, low down, which will not admit of even the smallest bougie entering from above, it is possible to enter the opening from below through a gastric incision. This is due to the fact that the œsophagus above the narrow stricture has become dilated by reason of the constant weight of food pressing to get through it, and has ceased to be funnel-shaped enough to direct the bougie aright, while viewed from below the canal is still funnel-shaped.

Even if a fine bougie can be made to enter, it is not practical or safe to stretch many of the dense strictures by the approach through the stomach, and either the patient must be nourished permanently through the gastric fistula, or the dangerous cutting operation must be performed.

To obviate the risks of internal œsophagotomy in tough and extensive strictures, Abbe advocates cutting with a string, the tissues being made tense by dilating with a bougie at the time. The principle involved is a commonly experienced one, that even a blunt object like a string, if drawn across a tense tissue, will cause a cut to occur which would not take place if the tissue were flabby. Experience has shown that if the dilatation has been carried to its utmost limit by a small conical bougie, when a string previously passed through the stricture was drawn back and forth, the dilating bougie could be rapidly advanced where before it had come to a stand-still in spite of any legitimate force that had been used. This advance was made with the loss of only a few drops of blood and with such rapid strides that in the case treated only four bougies were needed to enlarge the stricture from the size of the smallest to that of the largest the normal œsophagus would bear.

The patient on whom this operation was tried swallowed half a glass of strongest am-In a year signs of obstruction appeared, and the patient lost fifty pounds. This obstruction was thirteen and a half inches from her teeth. External œsophagotomy was per-An attempt was made to dilate the formed. stricture through this opening, but without suc-The usual gastrostomy incision was then made. A small conical gum-elastic bougie was passed from below, and was drawn through the wound in the neck. The lower end of the narrowing was two and a half inches from the stomach. Further dilatation was not practicable on account of the density of the stricture. The conical end of the bougie was tightly wedged in the stricture, the string was then pulled upward at the neck, when the stricture was felt to vield, and the dilator advanced through the mass. Three large bougies were consecutively passed, and each was tightly crowded in while the string was seesawed back and forth. dilatation a rubber tube the size of the finger was drawn into the œsophagus higher than the stricture and left in situ, the lower end coming out of the gastrostomy wound, thus giving the patient a chance to frequently rinse her mouth and throat with ice-water, which, when 'she swallowed, poured out of the tube below.

Nutritious food was meanwhile regularly placed in the stomach by another tube. Uninterrupted recovery took place. In a week she was again etherized, and the free dilatation was repeated, the string serving to assist a still larger bougie to pass as readily as before. This has since been passed without anæsthesia from the mouth to the stomach, and the string has been permanently removed. In two weeks the œsophageal fistula in the neck closed spontaneously. Dilatation was carried on from the mouth downward. The gastric fistula was secured against leaking by a Von Hacker's double rubber balloon, and the patient allowed to eat everything. Eight weeks after the gastrostomy the stomach was dissected from the abdominal wall, the fistulous aperture, nearly two inches in length, was inverted and secured by a first row of continuous Lembert sutures of fine silk and one of Halsted's interrupted quilted sutures outside of this. The sutured stomachwall was dropped into the abdomen, and the external wound closed with silk-worm gut. Convalescence was perfect. The largest bougie

now passes with perfect freedom, and its use will be continued by the patient for a year or two.

#### RESECTION OF THE LIVER.

SCHMIDT (Deutsche Med. Woch., No. 8, 1893) reports a successful case of extirpation of a gummatous portion of the liver, preceding his report by an imperfect review of the literature of the subject, apparently founded on Keen's paper, to which due credit is not given. The patient whom he treated was thirty-seven years of age, of a phthisical family history. She had lost a great deal of weight, became cachectic, and passed blood by the bowel.

Four weeks before presenting herself she noticed a movable tumor in the belly the size of an egg. On examination this tumor was readily outlined about the level of the umbilicus, moving with the diaphragm, and passing into the hypochondriac region or the right lumbar region. It evidently lay in front of the intestines. It was supposed to be connected with the transverse colon, and abdominal section was performed for its removal.

On opening the belly the growth was found attached to the lower quadrant of the left lobe of the liver. It was somewhat lobulated, and was harder than normal liver-substance. was not adherent to any of the surrounding parts. No other nodules were found in the liver. The tumor was brought out through the abdominal wound, the peritoneum surrounding its base was secured by a circular stitch to the parietal peritoneum, and the base of the neoplasm was surrounded by an elastic ligature, and was cut through. Four arteries and six veins were ligatured, and a point of oozing was touched with the thermo-cautery. The extraperitoneal position of the wound was secured by a second row of sutures, including the skin and walls of the liver, and the dressing was completed by iodoform-gauze packing. croscopic examination proved the growth to be

The patient recovered without complications.

USE OF LACTIC FERMENTATION IN THE BLADDER AS AN ANTISEPTIC APPLICATION IN CASES OF AMMONIACAL COMPLICATIONS OF THE URINE, AND THE TREATMENT OF PUTREFACTIVE WOUNDS AND SORES.

ROBERTS (Lancet, No. 3626, 1893) was consulted by a patient who five years before was

treated by lithotrity. The patient was compelled to employ the catheter for the complete evacuation of his bladder, at first twice a day, and for the last two years once a day.

At the time of examination there was very little irritation of the urinary passages, and the patient was required to relieve the bladder only once during the night. Examination of the urine showed that it was turbid, intensely acid, and contained sugar. Microscopic examination showed micrococci and bacilli resembling those seen in souring milk, and also toruli having the characteristic appearance of yeast-cells. There was also pus and a trace of albumin. The patient complained of none of the usual symptoms of diabetes. A remarkable feature of the case was the maintenance of a sharply-acid reaction of the urine and the absence of recurrent formation of phosphatic concretions in the bladder. The conditions in this case were peculiarly favorable for ammoniacal decomposition and the formation of phosphatic concretions, yet neither of these affections supervened. The explanation of this, Roberts holds, is to be found in the saccharine urine, which favors acid fermentation. In the case noted three fermentations tending to acidity appeared to be going on concurrently. The chief of these was the lactic fermentation, and lactic acid was identified as the main cause of the intense acidity of the urine. The second was the alcoholic fermentation engendered by the yeast-cells, which were always present in the patient's urine. The third was the acetic fermentation, for acetic acid was clearly demonstrated in the distillate from the urine. Roberts states that it is quite certain that if at some future time the patient ceases to be glycosuric, and still continues the use of the catheter in a careless way, the urine would in no long time be in the grip of the ammoniacal fermentation, and there would then be danger of the formation of phosphatic concretions in the bladder.

This case suggests that lactic fermentation might be turned to therapeutic uses. This agent might be tried in intractable cystitis from ammoniacal decomposition of the urine and in recurrent phosphatic formations after operations for stone. The mischief in these cases is contingent on the establishment of the ammoniacal fermentation in the bladder, whereby urea is changed into carbonate of ammonia. This change, if it goes far, renders the urine irritating to the mucous membrane and provokes cystitis; it also imparts an alkaline reaction to the urine, with consequent precipitation of the mixed phosphates. If a coun-

ter-fermentation of the lactic type could be maintained, the irritating quality of the urine would be diminished, its acidity would be restored, and the further decomposition of phosphates would be prevented. Attempts in this direction might be made by injecting into the bladder a saccharine solution which was in process of lactic fermentation. For this purpose malt extracts are probably the best avail-An ounce of such an extract able means. might be injected once, twice, or thrice a day into the empty bladder, and retained as long as possible. A course of treatment of this kind continued for a week or two would probably give the lactic fermentation the upper hand, and even enable it, for a time, at least, to maintain its supremacy after the saccharine injections had been discontinued, for it has been observed that organisms of the lactic type multiply freely in non-saccharine urine, and their presence appears to protect the urine to an important degree against the invasion and development of the ammoniacal fermentation. When the urine is strongly ammoniacal it would be necessary, as a preliminary step, to irrigate the bladder with an acid solution in order to abate the ammoniacal reaction, because it has been found experimentally that the lactic fermentations cannot proceed in the presence of a high percentage of carbonate of ammonia. this purpose a solution containing ten grains of citric acid in a pint of warm water may be safely used. Two or three pints of such a solution passed through the bladder would be sufficient to prepare the viscus for the reception of the diluted malt extract, and so render the development of the lactic fermentation within it possible.

The employment of the lactic fermentation as an antiseptic agent in the treatment of unhealthy wounds and sores was suggested by the behavior of putrescible substances with diluted malt extracts. Pieces of meat immersed in water containing five to ten per cent. of malt extract did not undergo putrefactive changes. The mixture passed forthwith into lactic fermentation, and more remotely into alcoholic fermentation. Moreover, when pieces of meat were first allowed to become more or less putrid, and were then treated (in the warm chamber) with daily-renewed dressings of diluted malt extract, the putrefactive process was speedily arrested. In twenty-four hours the reaction changed from alkaline (ammoniacal) to acid, and in two or three days the putrescent odor entirely disappeared. Corresponding results were obtained with pus and blood. The inference from the experiments was that if fetid wounds, sores, sinuses, and abscesses were treated in a similar manner, their condition would in a few days undergo a salutary change,—a change tending to promote the healing process and to diminish the risk of septic infection.

In some cases and conditions the antiseptic method is no longer practicable; fermentations of a putrefactive type have already become so firmly established that they cannot be suppressed by any direct antiseptic means. some of these cases a counter-septic, or metaseptic, method might prove serviceable. principle of such a method is easily understood. It consists in an endeavor to overcome and supplant a fermentation which has noxious products by a rival fermentation whose products are not noxious. So far as is known the poi-. sonous animal alkaloids (ptomaines) and albumoses are all the products of fermentations of azotized substances, whereas the products of fermentations of carbohydrate substances are innocuous.

NEURALGIA OF THE BRACHIAL PLEXUS
TREATED BY EXCISION OF AN OSTEOMA OF THE FIRST RIB, AND SUBSEQUENTLY BY APPLICATION
OF COCAINE.

VERNEUIL (Annales d'Orthopédie, tome vi., 7 année, No. 2, 1893) reports a case presenting a small tumor in the supra-clavicular region and suffering from violent neuralgia along the distribution of the brachial plexus. The tumor was found to be connected with the first rib. An incision two and a half inches long was made, the cords of the brachial plexus were swept aside, and the tumor was chiselled free from the rib. Excepting for a slight pleurisy, the patient's recovery was quite uninterrupted. He was entirely relieved of his pain. Four months later pains recurred, and a bony tumor was noted in practically the same position. This was resected, and the patient remained well for seven years; the pains then recurred and radiated not only down the arm, but to the neck and cardiac region. Incision into the old cicatrix showed a dense fibroid tissue which compressed some of the nerves of the brachial plexus. This was dissected away, but the operation was not followed by any marked improvement. A new incision was made through the skin and a five-per-cent. solution of cocaine was applied directly to the apparent seat of the radiating pains. These applications were kept up for some days. The pain then disappeared and has not returned for many months.

#### TREATMENT OF SPINA BIFIDA.

ROCHET (Annales d' Orthopédie, tome vi., 7 année, No. 2, 1893) operated on a child of three and a half years, suffering from a cervicodorsal spina bifida the size of a small orange. The laminæ of the first and second dorsal vertebræ were absent. The tumor was first punctured; later, Rochet made a vertical incision four inches long, opened the sac, and allowed its contained liquid to escape. The sac was dissected free to the bony opening and was resected.

Rochet rejected Berger's method of closing the gap fully by bone-plates taken from a rabbit, and adopted the procedure advised by Dollinger and Senenko. On each side of the bony defect the muscles were dissected free and the vertebral arches were exposed. These were fractured, and rendered sufficiently mobile to be brought together so that the defect was covered, and were kept in place by buried sutures. On the eighth day a serous fistula was established which persisted for fifteen days. Cure was finally accomplished.

Billroth treated a child of eight years, suffering from spina bifida of the sacral region. The sac was opened by an elliptical incision. The nerves were dissected free from the sac and reduced within the vertebral canal. The bony defect at the third sacral vertebra allowed the finger to be inserted. The sac was extirpated, and the incision was carried upward to the right iliac crest, from which a bony fragment-more than one inch long and fourfifths of an inch wide and two-fifths of an inch thick-was taken. This fragment, still adherent to the soft parts, was fitted into the congenital defect, the borders of the latter being freshened, and was there sutured. months later complete consolidation had taken place.

#### TREATMENT OF COXALGIA.

JULIEN (Annales d' Orthopèdie, tome vi., 7 année, No. 2, 1893) states that of the two thousand patients who came to his orthopædic clinics from 1888 to 1891, one hundred and twenty, or six per cent., suffered from coxalgia. Eighty-eight per cent. of these were of tuberculous origin. In the early stages but two methods of treatment were employed,—namely, the continued extension and immobilization. The question as to whether extension allows of separation of articular surfaces must still be considered sub judice. The researches of Poschen, Schultze, Morosoff, and others upon the cadaver showed that a weight of about forty-

five pounds is necessary to cause separation of the articular surfaces one-fifteenth of an inch. It is possible, however, that continued extension is especially serviceable as a means of immobilization.

Julien believes that immobilization is better secured by apparatus, since thus extension can also be obtained and the child can be more readily cared for, can be taken into the air, etc. When contractures are encountered, Julien reduces them by means of extension, aided by manual efforts at restoration to the normal position and the application of plaster dressings, while extension is kept up by the hands of assistants. Thus he avoids tenotomies, myotomies, osteotomies, etc.

When abscesses develop, their cavities are thoroughly curetted and the wound is closed. Julien insists upon conservative treatment of these cases. He does not believe in resection on account of abscesses, or fistulæ, or flexion of the joint, or contracture. In spite of these complications it is possible to obtain a better ultimate result than when resection is practised. He advises resection when acute ædema and elevation of temperature are not relieved by fixation of the joint, when the treatment of secondary abscesses of the pelvis necessitates resection and trephining, when fistulæ are accompanied by fever, which is not lessened by antiseptic treatment.

Resection in cases of coxalgia is only considered when its performance is necessary to save life. Measurements have shown that there is less arrest in development of the leg after coxalgia than after white swelling of the knee.

### THE ANTISEPTIC MANAGEMENT OF WOUNDS.

SIR JOSEPH LISTER (Lancet, Nos. 3624 and 3625, 1893), continuing his observations upon the subject of the antiseptic treatment of wounds, states that, in the absence of chemical antiseptics, sponges and silk for ligature must be well boiled. All instruments which will stand this process must be purified in the same way. In washing sponges boiled water is to be preferred, but unboiled water, if free from floating particles, would not be very likely to Towels dipped in boiled cause mischief. water and spread about the seat of operation will diminish the chance of contamination of the wound from surrounding objects. Then thorough cleanliness in the ordinary sense, by the free use of soap and water, must be practised for the hands of the surgeon and his assistants and for the skin of the part operated

on. For sutures under these imperfect antiseptic arrangements, materials incapable of absorbing putrescible liquids—silver wire, silkworm gut, or horsehair—should be used.

For dressing the wound, in the absence of chemical antiseptics, dry substances—such as absorbent cotton-wool or old linen—are better than moist dressings.

Iodoform exercises a powerful antiseptic influence upon wounds, though if dusted upon the surface of nutrient gelatin, growth will take place from the micro-organisms contained in the iodoform powder. The beneficial effects of this drug are due to the changes which it produces in the toxic products of the bacteria. In circumstances where it is impossible to exclude septic agencies, as in operations upon the mouth or upon the rectum, or when putrid sinuses are present, iodoform is of very high value. Before applying this drug, the cut surface is to be mopped with a solution of chloride of zinc, forty grains to the ounce. This in itself has a remarkable power of retarding septic changes in wounds in the presence of contaminating materials. On the field of battle, iodoform is probably the best means at present at our disposal.

In the treatment of compound fractures, whilst we endeavor to purify the wound with strong carbolic lotion, we cannot be certain of entire success in this respect. In operations performed where the integument is unbroken, with a sufficient space around for the application of a dressing, iodoform should not be used, since it affords no security against the penetration of septic microbes to the outlet of the wound.

Lister states that the dressing, to be ideally perfect, should contain a trustworthy antiseptic which is not so soluble that it is washed out by serous discharges, which is not irritating, and moreover such a dressing should freely absorb wound discharges. He still holds to the belief that the most satisfactory agent as an antiseptic ingredient of the dressing is the double cyanide of mercury and zinc. This salt is very little soluble in blood-serum, requiring between two thousand and three thousand parts to dissolve it; thus a small quantity of it will last a long time in spite of a free discharge flowing through it. is at the same time practically unirritating; wounds heal under its immediate contact without the necessity for a protective layer interposed. As to its antiseptic value, though the quantity the serum dissolves is small, it is amply sufficient to prevent the development of An experimental research showed bacteria. that in serum containing one-ten-thousandth

part of this double salt putrefaction was prevented for ten days.

It is claimed that this drug, when mixed with corpuscles and serum, is more potent as a germicide than any other. The double cyanide of mercury and zinc is much more powerful as an inhibiter than as a germicide, hence there can be no security that materials charged with this powder may not contain living organisms. In order to guard against this risk the gauze is treated before using it with a reliable germi-That which is now preferred is a 1 to 20 solution of carbolic acid, which, besides being thoroughly effective, has the further advantage that it soon evaporates from the dressing and leaves nothing in contact with the wound but the unirritating double cyanide and cotton fabric.

Formerly Lister employed a 1 to 4000 bichloride solution to moisten his dressing, but since it has been shown that the antiseptic power of the bichloride is almost entirely lost as soon as it comes in contact with the cyanide of mercury and zinc, producing a curious soluble triple compound which is slightly antiseptic and highly irritating, he has employed the carbolic lotion. The gauze is not wet, but simply The double cyanide, if used pure, is liable to dust out of the gauze on the slightest touch and is extremely irritating to the nos-To avoid this certain dyes were incorporated with the double cyanide, these having the power of attaching the latter to the fabric. Hæmatoxylin was at first used, but lately Lister has employed purified rosolane. For charging gauze the double cyanide is diffused with pestle and mortar in a 1 to 20 solution of carbolic acid, in the proportion of about thirty grains to a pint; and the gauze, which must be of thoroughly absorbent quality, is drawn, in a thickness of about eight layers, through the liquid, which is conveniently placed in a trough having a bar near its lower part, beneath which the gauze is made to pass, care being taken that the liquid is kept perpetually stirred to prevent precipitation of the salt. The gauze is then hung up to dry at the temperature of the air. Carbolic lotion is used in preference to water, both because the powder is very much easier diffused in it and because it is desirable that any dirty material which the gauze may happen to contain may be sterilized. This gauze is taken down before it is thoroughly dried and wrapped in mackintosh. This dressing may be prepared at a few minutes' notice for emergency or in private practice. The unprepared gauze is folded in eight layers, is thoroughly soaked in a 1 to 20 carbolic lotion, and is dusted with the double cyanide powder. The gauze is then rolled together and thoroughly kneaded. This produces a sufficiently uniform diffusion of the salt throughout the mass. If gauze is not at hand, linen rags or towels may be used, and bandages which are applied directly to the wound may be rendered antiseptic in a similar manner. A good antiseptic paste may be made by mixing double cyanide powder with a 1 to 20 carbolic lotion until a soft mud or cream is formed. This may be brushed upon the parts where there is very little space between the wound and some source of contamination. The antiseptic salt on the skin surface prevents the microbes from working their way into the wound under the narrow strip of dressing alone available. This double cyanide cream may also be applied to the hairy parts, thus converting them into a part of the antiseptic dressing. In changing dressings it should be an invariable rule to cover the wound with something thoroughly antiseptic before washing surrounding impure parts. For these washings a I to 40 carbolic lotion will be found most serviceable. When discharge is free, the first dressing is removed in twenty-four hours.

#### OPERATION FOR CEREBRAL TUMOR.

CLEGHORN (New Zealand Medical Journal, No. 1, vol. vi., 1893) operated upon a woman, aged twenty-six, who presented symptoms which justified a diagnosis of lesion of the right motor area, probably single, though evanescent right-eye ptosis and slight right-ankle clonus suggested the possibility of multiple lesions. The nature of the spasms suggested that the lesion was probably subcortical, and other symptoms pointed to its being tubercular in origin.

The patient was prepared for operation as usual, and an india-rubber band was drawn tightly round the skull to arrest hemorrhage. The fissure of Rolando was mapped out on the scalp by Reid's lines, and the bone was marked by a drill driven through the scalp at upper point of fissure of Rolando, and at a point two inches lower down along the fissure, before the scalp was raised. A three-quarter-inch trephine was used. The disks of bone were placed in a warm (1 to 60) carbolic solution, which was kept at body heat till the pieces were required. In the first operation one disk of bone was not replaced, in order to leave an exit for drainage, but in the other operations the disks and fragments were replaced, and no drainage was attempted. In each case, after the cortex was incised and some of the softened brain-tissue

removed, pulsation became marked, and could be noticed for some days after the operation.

At the time of the first operation a disk of bone was removed one and one-half inches down the fissure of Rolando, and three other disks were removed from around this first point. The dura bulged into the opening, but did not pulsate. It was incised, and the cortex bulged through the opening. The cortex was incised, the opening was enlarged by sinus forceps, and the finger was passed into a cavity filled with softened brain-tissue, extending two inches towards centre of brain, nearly to the falx, and for two inches from there towards the right border, where it was not more than one inch in depth. A quantity of braintissue sufficient to fill a dessertspoon was removed from this cavity by scraping with the finger, by small pieces of sponge held in forceps, and by washing with warm water. Two vessels were ligatured with fine catgut, the edges of the dura were brought together, a small opening being left under the centre of the disk first removed-which was not replaced --- for an india-rubber drainage-tube, which was brought through the scalp, through an opening made directly over the dural aperture. The other three disks of bone were replaced, and the edges of the incision in the scalp were united with silk sutures; a drainagetube was inserted at either angle of the scalp wound, and a copious cyanide gauze dressing was kept in place by a flannel bandage, applied over the scalp.

There was improvement for a month, then the patient's condition became worse, and epileptiform seizures occurred.

The second operation was performed two and a half months after the first. The replaced disks were firmly united to one another and to the skull. The scalp was dissected from a hernia cerebri, which was found to completely fill the opening left by the removed disk. This was transfixed, ligatured by catgut, and removed. The finger passed into the same cavity in the brain, which was again scraped and washed out.

Four months after the second operation a third was necessary. A disk of bone was removed with the larger trephine above and behind the highest disk removed at the first operation, one-third of it being to the left of the median line, though the extreme edge was half an inch to the right of the sagittal suture, which was quite one inch to the left of the median line. The dura was tense and did not pulsate. A spot beneath the centre of this disk was raised by Adams's eye-hook and in-

cised with the point of a scalpel. Venous blood flowed freely, and a probe passed through the opening was found to be in the longitudinal sinus. Later on, when the dura was opened lower down, this point was found to lie immediately over the falx. The same cavity found in former operations still existed. It was explored by the finger, and was again filled with softened brain-tissue. This was treated in the same way, the dura was sewed up, the disks of bone replaced, and the edges of the scalp incision brought together, no drainage being employed. There was great temporary amelioration, but a month later she suffered from epileptiform fits.

A second case—a boy, aged nine years—suffered from epilepsy, apparently due to cortical irritation. Four disks of bone were removed, including the star-shaped piece lying between the four circles. A cavity filled with softened brain-tissue was found. This was cleared out, the pieces of bone then replaced, and the wound closed without drainage. Four months later the patient appeared to be in good condition, and did not suffer from return of fits.

Microscopic examination of the specimens showed that the first was probably a cystosarcoma, the second a broken-down blood-clot.

#### THE TREATMENT OF PYÆMIC THROM-BOSIS OF THE LATERAL SINUS.

PRITCHARD (Lancet, No. 3627, 1893) holds that instances in which pyæmic thrombosis of the lateral sinus have been successfully treated should be placed on record, since thus the operation is encouraged and knowledge is spread as to the symptoms which indicate such operations. The objects to be obtained by operation are removal of the source of infection and blocking of the main route by which anything from the infected parts would enter the general circulation.

In the case reported there was no recent discharge, and there was caseating pus in the mastoid process. The membrana tympani was not perforated, there was no ædema over the mastoid process, nor could optic neuritis be found on examination with the ophthalmoscope.

A girl, aged thirteen, gave a history of purulent discharge from her ear during infancy and early childhood; it had not been noticed for several years. Eight days before treatment, without obvious cause, she complained of earache and headache on the left side, with pain in the upper part of the neck on the same side, on movement. These pains gradually increased

in severity, became constant and agonizing, and prevented sleep. Vomiting was an early and distressing symptom. She suffered from rigors. sometimes two or three a day, and twitchings of the right leg were said to have been noticed during sleep. Pressure behind the ear caused moderate pain, and there was marked tenderness of the upper part of the neck. On account of the severity of the symptoms, operation was decided upon. A two-inch incision was made one-fourth of an inch behind the pinna of the left ear; the periosteum was detached, and the mastoid antrum was opened by means of the chisel and mallet. On the first introduction of the chisel into the antrum gas bubbled out with the blood. The opening thus made was enlarged, during which process a few streaks of thick pus came away, but there was no distinct evacuation of any collection. Scraping with a sharp spoon only removed old cheesy pus without offensive odor, and it was thought that so far the cause of the severe symptoms had not been revealed. It was then determined to explore the lateral sinus. An incision was made backward from and at right angles to the preliminary cut. The opening in the skull was enlarged upward, backward, and downward. More cheesy matter was scraped away, and, as the dura mater covering the temporo-sphenoidal lobe bulged considerably into the upper part of the aperture, this membrane was opened and a carefully-purified exploratory needle was passed into the brain-substance in search of pus, but with no result; the incision into the dura was then united with a fine catgut suture. After a little more chiselling the lateral sinus was completely exposed, and was explored by means of a hypodermic needle, but neither blood nor pus could be drawn up. On withdrawing the needle, however, it was found to have a very offensive odor. The outer wall of the sinus was next opened by a longitudinal incision, and on scraping out the contents fetid gas bubbled up. A probe was thrust upward towards the torcular Herophili and downward towards the internal jugular vein, but no blood could be made to flow, and on withdrawal the probe had a most offensive odor. The next step was the ligation of the internal jugular vein, and an incision was made from the angle of the jaw to the cricoid cartilage; but, on account of the matting together of the enlarged and inflamed glands, this incision had subsequently to be enlarged. The vein, when exposed, appeared to be collapsed; it was tied in two places and divided between the ligatures. The lateral sinus-was again scraped with a sharp spoon and syringed out with a solution of perchloride of mercury (1 in 3000), in the hope that by these means the original source of infection could be removed. Three days later, on account of the rise in temperature, the opening in the skull was enlarged, particularly in the backward direction, the lateral sinus was further exposed and cleared of its clotted contents by means of a sharp spoon, and the outer wall was entirely removed, so that the sinus was practically obliterated. The upper end of the sinus was allowed to bleed for a few seconds in order to clear away the remaining offensive clots; hemorrhage was easily controlled by light pressure. The wound in the neck was then reopened, and the internal jugular vein dissected out as far as possible in the direction of the skull. A solution of perchloride of mercury (1 in 2000) was syringed from the remains of the sinus through the remnant of the internal jugular vein into the wound in the neck; much offensive clot came away during this process. The wound in the neck was sutured and a cyanide gauze dressing was applied.

The convalescence of this child was practically uneventful.

#### THE RATIONAL TREATMENT OF BUBO.

Lydston (Times and Register, vol. xxvi., No. 10) states that the treatment of bubo varies in accordance with the stage in which it is first seen. Thus, certain means are adapted for the prophylaxis of bubo. Other means are applicable before there is distinct abscess formation; when pus is clearly formed special treatment will be required. The prophylaxis of bubo lies in thorough cauterization of the chancroid, the avoidance of irritants, and the maintenance of as complete rest as practicable in all urethral or genital lesions.

The ideal prophylaxis of pus-formation is the early and effective extirpation of the affected glands.

Lydston holds that it is the duty of the surgeon to extirpate the glands in every case in which distinct enlargement occurs and persists for several days in spite of rest and poulticing.

Foci of suppuration form in the affected glands very early. They are at first chiefly at the periphery, and the likelihood of infection of the periglandular tissues is correspondingly greater. Once these tissues are invaded the prevention of annoying and persisting suppuration is extremely difficult. In by far the large majority of cases suppuration has really oc-

curred within a week of the onset of the bubo. even in the less fulminant varieties. Sometimes absorption may occur, but this is rare, and not to be desired. Though the glands may not suppurate, they are a perpetual source of annoyance and anxiety, for they do not readily go back to their normal state. In most cases after early excision of the glands healing is primary and prompt, and when it is not so it is because operation has not been resorted to promptly. Even though primary union does not take place, healing is quicker than in cases operated on later, for all of the originally infected tissues have been removed, and there are no glandular remnants to perpetuate suppuration.

When suppuration has actually taken place and periadenitis exists, free incision and curetting is demanded. If the bubo is non-virulent, suturing is justifiable if due antisepsis be observed. Virulent bubo in full suppuration requires thorough cleansing with peroxide of hydrogen; cauterization with pure bromine or carbolic acid. When granulation is well advanced, secondary suturing is admissible. For dressing granulating buboes balsam of Peru is advisable.

#### TREATMENT OF BLADDER TUMORS.

BAZY (Revue de Thérapeutique Médico-Chirurgicale, 60 année, No. 5, 1893) summarizes the treatment of bladder tumors as follows: All tumors of the bladder are removable, and in the large proportion of cases operation should be undertaken. Indications are pain, frequent urination, hæmaturia, retention of urine. Either palliative or curative operation can be performed. Palliative operation consists in the formation of an artificial opening into the bladder. The best approach to the seat of trouble is by the hypogastric incision. The best operation consists in total excision of the tumor by means of a knife. This is practicable in whatever position the neoplasm is found. It is never necessary to perform symphyseotomy, or in other ways interfere with the integrity of the pelvic girdle.

Section of one or both recti muscles is sufficient. The inverted position may greatly facilitate operation, but is not necessary. Suture of the wound, necessitated by ablation of the neoplasm, should be performed whenever this is possible. When the tumor is placed at or about the orifice of the ureter complete closure of the wound will not be practicable. Suture of the bladder wall is recommended whenever this can be carried out.

THE CLAMP AND THERMO-CAUTERY.

SMITH (Lancet, No. 3627, 1893) states that for many years he has not had a single case of blood-poisoning, hemorrhage, or any serious complication after an operation on hemorrhoids, nor have there been any instances of cicatricial contraction sufficiently marked to interfere with function. The author is a firm believer in the clamp and cautery. Formerly he seized the pile with the clamp, trimmed away the redundant tissues with the scissors, then cauterized the base. In some few cases moderate hemorrhage occurred when the bowels were first opened. Laterally he has employed cautery blades with serrated edges, heated to a dull-red heat. If the piles are divided by means of such blades, every vessel must of necessity be acted on by the cautery, and the laceration produced by the serrated edges acts as an additional safeguard against bleeding.

Another improvement adopted of late years is the thorough dilatation of the sphincter previous to operation. Care must be taken to avoid actual rupture of the fibres, since incontinence may result. Dilatation of the sphincter, however, greatly facilitates operation, and tessens, or even quite abolishes, after-pain. When the patient suffers after operation, the best local remedy for its relief is the constant application of very hot water by means of a small sponge. In patients operated on in this way constitutional disturbance is usually so alight that it is difficult to persuade them that it is needful to remain in bed for a few days.

# THE SUBCUTANEOUS USE OF DOSES OF SUBLIMATE IN THE TREATMENT OF SYPHILIS.

HOROVITZ (Centralblatt für de Gesammte Therapie, 11 Jahrgang, 1893) holds that all mercuric treatment of syphilis should aim at as thorough saturation of the tissues with the drug as is possible without the appearance of toxic symptoms. Moreover, this saturation should be brought about as rapidly as possible, and the drug should be so administered that eliminative processes cannot carry it entirely out of the system. These indications he holds are best fulfilled by the use of hypodermic injections of soluble preparations of mercury. The criticism which is maintained against the use of soluble preparations is that they are so

quickly absorbed into the system that no quantity is left in the tissue from which fresh absorption can take place as elimination progresses. Hence such injections must be frequently repeated. Experience with one case, however, showed that this objection to the use of soluble preparations of mercury does not hold. The case was treated with one-halfper-cent. sublimate injections, repeated every third day until twenty-four treatments were applied. Nevertheless, surface manifestations appeared, requiring a new course of injection treatment. In the beginning of this new course acute inflammation developed at the seat of injection; this was followed by marked saliva-This subsided on the fifth day, as did likewise the skin manifestation of syphilis. Since this patient had shown no undue reaction to the first course of injections, the question is most interesting as to why salivation should occur immediately after the institution of a second course. This was evidently owing to the fact that the indurated area remaining after the first course of injections was practically a depot for mercury, from which rapid absorption took place consequent upon inflammation excited by the beginning of the second course of injections. As a result of this rapid absorption, lesions were cured and some toxic symptoms were manifested.

This case naturally led the author to conclude that the hypothesis as to rapid and easy absorption of soluble preparations of mercury was not founded upon fact, and that necessarily stronger solutions of sublimate should be employed in the injection treatment; thus would be formed a deposit of mercury at the site of injection, even if soluble preparations are used, from which absorption would be relatively slow, though perhaps not so slow as when insoluble preparations are used.

In the next patients a three-per-cent. solution of perchloride of mercury was used. These injections were well borne. No intoxication symptoms developed when the injections were repeated every fourth or fifth day, nor was the inflammation at the spot of application more marked than when weak solutions were employed.

Lukasiewicz coincides with Horovitz in his opinion as to the soluble preparations of mercury. He uses five-per-cent. solutions, and obtains very excellent results. The author no longer uses sodium chloride in the preparation of his solutions, but adds an equal quantity of absolute alcohol to the water. This makes a less painful injection liquid than the old salt-and-water solution.

#### Reviews.

HAND-BOOK OF MATERIA MEDICA, PHARMACY, AND THERAPEUTICS, INCLUDING THE PHYSIOLOGICAL ACTION OF DRUGS, THE SPECIAL THERAPEUTICS OF DISEASE, OFFICIAL AND PRACTICAL PHARMACY, AND MINUTE DIRECTIONS FOR PRESCRIPTION-WRITING. By Samuel O. L. Potter, A.M., M.D., M.R.C.P. (Lond.). Fourth edition. Revised.

Philadelphia: P. Blakiston, Son & Co., 1893.

As will be seen from the title of this work, the author has undertaken rather a difficult task to combine in one volume, and that of convenient size for a text-book, the study of materia medica, pharmacy, prescription-writing, and therapeutics. He has also added an appendix, with bits of information from the various collateral branches of medicine. author might have reflected credit upon himself had he done full justice to any one of the above subjects, but in attempting so much no one subject has been fully considered. Within the seven hundred pages there is contained much valuable information, recent text-books upon therapeutics having been most freely drawn upon.

The arrangement of text-books so that the matter may be easily comprehended and assimilated is of the greatest importance to the student, but the author seems to have paid little attention to this important detail.

Part I. is devoted to materia medica and therapeutics. The drugs, both official and officinal, are alphabetically arranged, beginning with arbus and ending with zingiber. After the official and English name of each drug, the description, constituents, preparations with doses, general physiological action, antagonists and incompatibilities, and therapy are given. Scant description is given to symptoms and treatment of poisoning.

The usual error is made that belladonna and opium are antagonistic in their effect upon the pupil. Too much stress is laid upon "giving undivided attention to respiration in chloroform anæsthesia," as cases of heart-failure preceding respiratory failure are on record.

Part II. takes up the consideration of pharmacy and prescription-writing. There are many good points in this chapter.

Part III.—"Special Therapeutics"—seems to have been written to give volume and weight to the book. There are two hundred and twenty-seven pages devoted to an alphabetical list of diseases, with an alphabetically-arranged list of drugs used in the treatment of each disease. The drugs are not selected as the best by the author, but are quoted from various authorities.

Dr. Potter's work is so good that it can stand much adverse criticism, and any criticism offered is not intended to be carping, but as indicative of points which might be improved.

It deserves the abundant success it has acquired, and will continue to be one of our leading therapeutic guides.

E. O. T.

A MANUAL OF CLINICAL OPHTHALMOLOGY. By Howard F. Hansell, M.D., and James H. Bell, M.D. With one hundred and twenty illustrations.

Philadelphia: P. Blakiston, Son & Co., 1892.

It is not an easy task to condense within a little more than two hundred pages the essential points in the anatomy, physiology, refraction, and common diseases of the eye, and at the same time to present the facts with sufficient clearness that they may be grasped by the undergraduate. This has been the purpose of the authors of this volume, and they are to be congratulated upon the success of their endeavor.

All portions of the book will prove of value to the student and general practitioner, and especially the sections which treat of the anomalies of refraction and of the external ocular muscles. The chromo-lithograph of the normal fundus is excellent, and, indeed, most of the illustrations, which have been judiciously selected, are good reproductions.

The authors would have been more than human had they succeeded in avoiding errors in a first edition; for example, the representation of Priestley Smith's perimeter is credited to McHardy, Dr. Stevens's name is printed "Stephens," and the plural of "cilium" is given as "ciliæ."

Necessarily the authors have been obliged to describe with brevity the treatment of the various ocular disorders, and at times to express themselves dogmatically; but we think it unfortunate that more space has not been devoted to methods of managing the most important conjunctival and corneal inflamma-No doubt this fault will be obviated in a second edition, which, we feel sure, will soon Cataract extraction with iribe demanded. dectomy is evidently preferred, but the characterization of simple extraction as both "difficult and dangerous," in the light of modern advances, sounds a little odd. The authors urge that in the simple section a conjunctival flap is to be avoided, a piece of advice which need not be followed; if, for example, Knapp's section is performed, a small, central conjunctival flap is practically always produced, and, as that distinguished author says, if anything

is an advantage. We are very far from agreeing that transplantation is the best operation for pterygium.

The book will more than repay perusal, and we heartily recommend it to student and practitioner, and to any one who desires to read a brief review of the most important points in practical ophthalmology.

THE INTERNATIONAL CLINICS. A QUARTERLY OF CLINICAL LECTURES. Edited by John M. Keating, M.D., Judson Daland, M.D., J. Mitchell Bruce, M.D., and D. W. Findlay, M.D.

Philadelphia: J. B. Lippincott Company, 1893.

Vol. IV. of the second series of "International Clinics" contains fifty-two lectures by physicians occupying prominent positions in the medical profession in various parts of the world.

An interesting biography of Dr. H. I. Bowditch, of Boston, opens the volume, which is completed by reports of the clinics of such men as James Tyson; A. L. Loomis; Bristowe, of London; Atkinson, of Baltimore; Cary, of Buffalo; Keen, of Philadelphia; Abbe, of New York; and Duhring, of Philadelphia.

As we have said in an earlier issue of the GAZETTE, these clinics are practical, brief summaries by able men of our information at the present day concerning the diseases which they treat.

HISTORY OF THE LIFE OF D. HAYES AGNEW, M.D., LL.D. By J. Howe Adams, M.D.

Philadelphia and London: The F. A. Davis Publishing Company, 1893.

The chief value of this biography of Dr. Agnew rests, it seems to us, in the illustrations which are scattered through the book. In addition to a series of interesting photographs of the subject of the work, showing him as he appeared at different times in his long professional career, there is a picture of the Philadelphia School of Anatomy, where was laid the foundation of the extraordinary reputation which Dr. Agnew acquired. Mention is made of a number of interesting occurrences in his connection with the medical profession as a teacher, and a fac-simile of the title-page of the Japanese edition of his celebrated work on surgery is given.

While there is much to commend, both in the spirit and word of this biography, there is also a good deal which those who knew Dr. Agnew best recognize as being distant from his nature and desires. A sketch of his ancestral tree, or any thought concerning his pedigree, excepting that it was respectable, was about as far from Dr. Agnew's mind as any subject which could be thought of; and as he was loved because of himself and not because of his ancestry, we confess to a sense of disappointment that the opening pages of the book should be marred by a discussion of family matters which are in no way interesting to the ordinary reader, and which, as we have said before, are peculiarly foreign to a biography of a man of Dr. Agnew's calibre. Many of the addresses which have been delivered in memory of Dr. Agnew have contained interesting facts concerning him, and this book, of course, contains much that these essays contain.

It is to be hoped that through this book the "Dear Old Man" will continue to improve the tone of the medical profession wherever his students are scattered.

A SYSTEM OF GENITO-URINARY DISEASES, SYPHILOLOGY, AND DERMATOLOGY. By various authors. Edited by Prince A. Morrow, A.M., M.D. With illustrations. In three volumes. Volume I., Genito-Urinary Diseases. New York: D. Appleton & Co., 1893.

The first of the three volumes of this work on genito-urinary diseases, syphilology, and dermatology amply justifies Dr. Morrow in presenting, in the form of a system, what have been considered special and comparatively unimportant branches of the healing profession.

The contributors to this first volume are all men of note in their special work; thus, Belfield, Tilden Brown, Keyes, Morrow, Otis, White, and Thorndike are familiar names not only to the specialist, but to the general surgeon.

The volume opens with a brief chapter on the anatomy and physiology of the genito-urinary organs. The physiological section of this chapter is not entirely satisfactory; indeed, the whole of this section may be criticised on the ground that it is scarcely comprehensive enough for a work of the scope under discussion. Diseases of the penis are discussed by Ramon Guitéras. In his consideration of abnormalities of the penis, the matter of treatment is scarcely given the attention that it deserves. No extended mention is to be found of indurations of the corpora cavernosa, so admirably described by Mauriac.

Tilden Brown's section on diseases and injuries of the urethra is one of great practical value. The author figures a number of his own instruments and devices, all most ingenious and some superior to any others. His urethroscope,

however, will not be found as satisfactory as those of a different pattern.

Lustgarten, in writing on the etiology of methritis, reiterates the statement made in a previous paper as to the fact that a pseudo-gonococcus exists which on microscopic examination may simulate true gonococcus in all its reactions. He states that the distinction between a gonorrhoeal discharge and the normal secretion of the urethra seems to depend only on the fact that in the first case the gonococci are to be found in greater numbers, and are not accompanied by so many banal microorganisms.

Brewer writes upon acute urethritis in his characteristic clear, direct style. This forms a valuable chapter, strongly reflecting the author's present views.

William K. Otis treats the subject of chronic gonorrhoea, or gleet, and describes his own ure-throscope, by all odds the best yet described. The constant use of the term "tripperfaeden," not only in this particular article, but all through the book, is not to be commended. The literal translation, "clap shreds," or, better still, "pus shreds," would be more satisfactory even to German scholars.

Klotz is well qualified by his studies on this subject to write upon endoscopy. This paper covers the practical points of the subject. Hartley very briefly treats the special subject of gonorrhoeal rheumatism. Tuttle contributes an excellent paper upon what might be termed "extra-genital gonorrhoeal inflammations." He holds that the rectum, nose, and mouth are subject to the infection of the gonococci.

An admirable paper on stricture of the urethra is contributed by J. William White. The clear, forcible teaching characteristic of this author is apparent throughout the entire chapter.

Belfield, who is perhaps more identified with the surgery of the prostate than any other living surgeon, writes upon diseases of this gland. The pages upon operative treatment of prostatic enlargement are particularly valuable. Bryant, under the heading "Functional Diseases of Micturition," discusses certain symptom-groups in an exceedingly instructive manner. Fuller considers the diagnostic significance of pathological modifications in the urine. This very large subject he disposes of in comparatively few pages, and yet manages to cover all the important points of his subject. Fordyce devotes a space to urinary fever scarcely commensurate with the importance of the subject. He has, however, included everything which is practical and modern. Willy Meyer contributes an admirable and scholarly paper upon cystoscopy. This section is deserving of the highest praise. Alexander devotes about thirty-three pages to the cystites. The section on treatment is particularly to be commended. Fowler writes on wounds of the bladder, including in his subject foreign bodies, malformations and malpositions, and other abnormalities. Stein treats of rupture of the bladder. Watson describes tumors of the bladder, inserting in his article suitable reproductions of Albarran's famous plates. This paper is really a monograph upon the subject. Cabot's article on stone in the bladder is one of the longest and best of the entire series of papers. Stimson considers "Surgical Diseases of the Kidney" in a complete and satisfactory manner. The subject is admirably condensed. Though the mode of writing is somewhat dogmatic, the reader is not confused by presentation of conflicting views without a clear statement of the author's preferences.

Diseases of the scrotum and testicle are treated by Bell, Burnett, Bryson, Wyeth, and Vanarsdale.

The subject of hæmatocele has been somewhat slighted. In discussing the treatment of acute orchitis, this affection is evidently confounded with acute epididymitis. The chapters upon inflammatory diseases of the testicles and epididymes show familiarity with the scholarly treatise of Monod and Terrillon.

Keyes briefly describes his own method of operating upon varicocele; this in his hands has been most successful. Bryson gives a satisfactory résumé of the clinical features; and treatment of tumors of the testicle and hydrocele and spermatocele are systematically studied by Wyeth and Vanarsdale.

Thorndike devotes a chapter to diseases of the seminal vesicles. This is a minor subject, it is true, but one which the author has studied to good purpose, since his paper, brief as it is, is probably the most complete to be found upon the subject.

Morrow writes upon functional disorders of the male sexual organs. This chapter is eminently practical. Special branches of the general subject are treated in a purely scientific spirit, equally free from any trace of vulgarity or of false modesty.

The volume finally closes by a section on gonorrhoea in the female, by Currier. This author states that in the cases of gonorrhoea in women which he has seen, the greater number have come with vaginitis as the most conspicuous symptom; the next in frequency were those who suffered from pelvic peritonitis of gonorrhoeal origin; fewer in number were those who suffered with urethritis and cystitis. This is not the order of frequency which would be given by the majority of genito-urinary surgeons.

Perhaps the only adverse criticism to be passed upon this work is that it is not encyclopedic, space being devoted to practical teaching rather than scholarly research. This, if it be a fault, is one which will not interfere with the popularity of the system.

THIRTY-NINTH REPORT RELATING TO THE REGISTRY AND RETURN OF BIRTHS, MARRIAGES, AND DEATHS, AND OF DIVORCE IN THE STATE OF RHODE ISLAND FOR THE YEAR ENDING DECEMBER 31, 1891. Prepared by Charles H. Fisher, M.D.

Providence, R.I.: E. L. Freeman & Son, Printers to the State, 1892.

This statistical report upon the records of the vital movements of the population of Rhode Island has a deservedly wide reputation, on account of the accuracy of the compilation and the exceptional fulness with which the records have been kept. In addition to the figures and summaries constituting the bulk of the volume, will be found appendices, one upon nomenclature of diseases or causes of death, another with suggestions concerning physicians' certificates and causes of death; also one upon the laws of Rhode Island in relation to the registration of births, marriages, deaths, and divorces.

The work is exceedingly creditable to its compiler, Dr. Charles H. Fisher, and sets an example which it would be well for all the States to follow on the model of this report.

THE YEAR-BOOK OF TREATMENT FOR 1893. BEING A CRITICAL REVIEW FOR PRACTITIONERS OF MEDICINE AND SURGERY.

Philadelphia: Lea Brothers & Co., 1893.

This year-book of treatment has already become so familiar to the profession in England and America that it is unnecessary to do more than call attention to the publication of the The articles which it last year's summary. contains are necessarily brief, but are very useful condensations of the literature of the therapeutics of the past twelve months. Particularly useful are those articles which are not mere abstracts from journals, but consecutive notes upon given subjects, in which the ideas of the editors, to some extent at least, find representation. The physician who has this book at his hand, with one or two of the other annuals published,-such as the "Medical Annual," published by Treat, and "Braithwaite's Retrospect."—cannot fail to feel that he is keeping in touch with the best portion of medicine to-

day. There are very few articles of great importance which will not be found in one of these three volumes.

#### Correspondence.

#### LONDON.

#### (From our Special Correspondent.)

St. Bartholomew's.—The Casualty Department.—Last month I devoted myself to the description of one of the special departments. There everything was quiet and orderly, and there was nothing to indicate working at high pressure save the nature of the therapeutic agent employed. This month I intend to describe a far busier scene,—the Casualty Department, as it is called,—the great filter of the hospital through which the multitude of patients have nearly all to pass before finding a haven either in the wards or in one of the many out-patient departments.

I do not suppose it is my duty in these lines to show either approval or disapproval of the system in vogue at St. Bartholomew's. To the great presiders over the charity it may seem very satisfactory to be able to state that during a given year so many tens of thousands, or even hundreds of thousands, of patients were seen; but, of course, this may have an entirely different appearance for the physicians who see this vast mass of suffering humanity, or even for the patients themselves. I may, however, say once for all that, notwithstanding the fact that the casualty physicians often have to see patients at the rate of nearly one hundred and fifty an hour, it seldom happens that any one who is really seriously ill escapes attention, and mistakes of a serious nature are extremely rare. Possibly in the future some improved plan will be discovered for dealing with our sick poor, but until that time arrives the Casualty Department and its officers will continue to do good work,

A hundred and fifty an hour! What a stupendous task! the reader will say. Yet this is no imaginary number, as may be seen almost any morning of the week. How is it done? This I am now going to describe.

The Staff.—The casualty staff consists of three casualty physicians, the junior assistant physician, the junior assistant surgeon, the eight house surgeons, and the four assistant house physicians. Besides these, there is a staff of liveried porters and nurses, and in the "casualty dispensary" a body of attendants to

dispense the more frequently used medicines,the carminatives, the astringents, the emollients, purgatives, etc.,—which are sent over daily from the hospital apothecary's in great stone jugs. All these officers hardly know a moment's rest from the time the doors open, at Q A.M. exactly, until the room is cleared of patients, which feat has usually been accomplished by about 11 A.M. Think what a busy scene it must be! According to the report just issued, there were no fewer than 142,745 casualty patients seen during last year. These numbers seem so huge that one is inclined to wonder where so much illness comes from. Of course all are not seriously ill, but it is fair to assume that nearly all are at least indisposed, and some are serious cases, as witness the remaining numbers in the same report, which show that during the year 5953 of these became inpatients and 16,143 out-patients. It is not often that one meets the man described years ago by Dr. Bridges, a former casualty physician. Being asked what was the matter with him, this man "didn't know that he had anything particular the matter with him, but as he was passing the hospital, he thought he might as well come in and have a draught." To such a man probably nothing out of a bottle would come amiss, but I pity him for the dose which the infuriated physician is likely to have given him!

The Room.—To return, however, to my description. The casualty patients are all seen in the "surgery,"—a great hall abutting on West Smithfield, ninety feet long by thirty Rooms open from both sides of this, wide. those on one side being occupied by the medical staff and those on the other side by the surgeons and by students, who constitute their dressers or assistants. The entrance is by two doors in the centre of the Smithfield side, and on the opposite side, facing these, is the dispensary counter. The floor of the hall is divided up by screens, one end being devoted to the women and the other to the male patients. who wait either on forms or standing in file near the rooms in which they will be eventually seen. In this area space is also reserved for the assistant physician and assistant surgeon, who are only on duty on the busiest days of the week.

The Clinic.—At 9 A.M. precisely the doors are opened for the admission of patients,—not widely, but held just open enough to admit one patient to squeeze in at a time. This requires all the care of the porter on guard. Every patient, before being let in, has to answer a crucial question as to what is the

matter with him. Having done this satisfactorily,—and it requires almost a special education to get this out of the London pauper patient,—the porter, rightly or wrongly, drafts him to one or other of the physicians or surgeons, having first given him a zinc ticket. If he has been before, and can show a paper to that effect, he is allowed to enter without further question, and makes his way to the benches he previously occupied. It is distinctly amusing to listen to some of the colloquies which take place between porter and patient, and their character throws much light on human nature of a sort. Standing beside one of the casualty physicians, one gets a still better chance, and I know of no better school for the acquisition of the habit of facial diagnosis or for the acquisition of patience in hearing crooked answers.

By about half-past nine there will be something like three or four hundred patients waiting in the hall. About one-third of them will be waiting in single file, the others sitting on the forms, the women discussing and comparing their symptoms and the men silent. At ten exactly the doors are closed and no more are admitted. If one left the room now and returned at about eleven, nearly all these patients would be found to have been disposed of,-either treated outright or referred to one of the other departments. Treated, one must call it, but for what, and how can the diagnosis be made in such a short time? Of course want of time is seriously felt on all sides, not only in the diagnosticating department, but also in the dispensary. Every possible device is employed to save labor; it is, as a rule, found impossible to make any notes of the cases seen, or to give them written prescriptions. The physician having made up his mind whether a patient is really ill or not,—mainly, it must be owned, through his sharpened powers of facial diagnosis, aided by two or three questions (repeated several times, it may be),—gives him a ticket bearing the initial of the mixture he wishes taken, or some other sign which the dispensing staff will recognize. This is taken to the dispensing counter on the opposite side of the. room, with a pint bottle or jar, which is then filled out of one of the big stone jugs, and the patient departs. If it is thought necessary that anything more elaborate is required than the simple mixture kept here, the physician has to write out a prescription, which is then taken to the apothecary's shop on the other side of the square. This is, of course, avoided as much as possible, even at the risk of treating a great number of disorders with the same medicine.

The Predominant Ailments and their Remedies.—What is chiefly the matter with this swarm of patients, and how does the system work? It may be said at once that apparently, from a practical point of view, the plan is a good one, for the bulk of the patients come only a few times, perhaps only once, and further evidence of the success of treatment lies also in the unfailing supply of fresh cases from year to year. As to what is the matter with them, the nature of the medicines most in favor will give some indication. That which is used in by far the greater number of cases is the "queen iron," mixture, as they call it, a simple mixture containing ferric chloride and quassia, the taste of which leads the patients to think they are taking quinine, hence their name for it. This seems to do a wonderful deal of good in the cases of atonic dyspepsia, struma, general wretchedness, etc., which are engendered by working for long hours in the crowded, hot rooms which so many of them have to frequent. Two or three bottles of this generally suffice to make cases of this sort feel all right again. Perhaps next in favor comes the "haust. menth. sulph. c. mag. sulph."

R Mag. sulph., gr. lx;
Acid. sulph., dil., mx;
Syr. papav. rub., mxxx;
Aq. menth. virid. to Xi.

This is, besides being one of the most efficacious, one of the cheapest mixtures in the Pharmacopœia. Next comes the "haust. gentiana c. rheo."

> R. Inf. rhei, 3ss; Tinct. gent. co., 3ss; Sod. bicarb., gr. xviii; Sp. chloroformi, mx; Aq. menth. pip. to 3i.

The efficacy of this mixture in a large proportion of the cases of dyspepsia is without question. The remainder of the stock of the small dispensary is made up of cod-liver oil, pills, the ever-valuable house physic (dear to the memory of the indulger in excess of alcohol), ointments, etc.

It will strike every one who visits the department as little short of marvellous that mistakes are not more frequently made. That it is not the case is greatly to the credit of the staff, who seem to have everything against them. One's pity is extreme for the poor man who has to face and subdue some of the talkative female patients. "Well, madam, what is the matter with you?" says the doctor, and if she

were allowed to have her own way, one might believe that she possessed every ailment named in the College of Physicians' list, and a great deal to say about each. But this is not allowed. From being persuasive the questioner becomes severe, finds out by repeating each question about three times that dyspepsia, say, is the real trouble, gives the right-colored or initialled ticket, and goes on with the next case. In epidemics of any particular ailment, the examination is often carried out wholesale, and one may sometimes see a row of people complaining of sore throat, waiting to be examined seriatim with the aid of the spatula, or a number of cases of bronchitis stripped ready for the cursory examination which alone is possible.

But I am exceeding the limits which the editor will be inclined to allow me, so must draw these remarks to a close. I may say this much about the Casualty Department, that the work is done as well as it can possibly be under existing circumstances, and that a visitor will have no adequate idea of the immense work done by the hospital till he has watched in the surgery for a morning or so. Whether it be wise or economical to treat free gratis and for nothing a man or woman who owes the indisposition to indulgence in too much beer on the previous day is a question for the managers to decide.

#### Notes and Queries.

Those of our readers who have been interested in reading the reports which have appeared in the Therapeutic Gazette concerning the treatment of myxcedema by the employment of thyroid-gland grafting, or the injection of thyroid extract, will be interested to learn that Messrs. Parke, Davis & Co. are now prepared to supply desiccated thyroids, in the form of an impalpable powder, in such a way that each fifteen grains represents one gland of the average size from the sheep. They are also ready to supply "cerebrin," and will guarantee the absolute asepsis of both of these preparations.

So much literature has been accumulated within the last few months indicating that the thyroid extract is of great value in myxœdema, that many of the profession in this country are already trying the method, with asserted good result.

# Therapeutic Gazette.

Whole Series, Vol. XVII.

DETROIT, MICH., PA., May 15, 1893.

Third Series. Vol. IX. No. 5.

#### Helianthus Annuus and Methylene Blue in the Treatment of Infantile Malarial Fever...... CONTENTS. Original Communications. rever. Chromic Acid in the Treatment of Diphtheritic Angina. The Production of Angsthesia by the Combined Use of Bromide of Ethyl and Chloroform. Leading Articles. What is the Value of the Salicylates in Reports on Therapeutic Progress. Ansemia 335 Treatment of Pericarditis by Ice-Bag... 335 The Treatment of Sympathetic Eye-In-Anemia flammations, Conservative Treatment of Strabismus orrhage 350 A New Operation for Paralytic Talipes Valgus. 352 Actino-Mycosis cured by Iodide of Po-Opium 308 Excretion of Morphine by the Saliva 308 Creceote Treatment of Pulmonary Tuber The Treatment of Gonorrhoca with Chlo-ride and Iodide of Zinc Injection...... Some Mistakes in the Use of Intravesi-cal Injections in the Treatment of the The Physiological Action of Bromide of Some Practical Points in the Treatment of Granular Lids. Acute Mercurial Intoxication by Hypo-

#### Original Communications.

SOME RESULTS OBTAINED FROM A NEW TREATMENT OF GONORRHŒA.

By H. M. CHRISTIAN, M.D., Chief of Genito-Urinary Clinic, University of Pennsylvania, service of Dr. Edward Martin.

N the London Lancet, February 27, 1892, a new treatment for acute gonorrhœa is described by Cotes and Slater. The main points of the treatment, in brief, are as follows:

The patient first urinates, thereby washing out most of the gonorrhoeal discharge from the urethra. With the patient in the recumbent posture, the urethroscope is passed into the urethra as far back as the posterior margin of the area of inflammation, which is usually found to be about four to five inches from the meatus. After the urethra has been thoroughly cleansed and dried by the application of a cotton mop, a cotton-wrapped stilette, charged with a ten-per-cent. solution of nitrate of silver. is carried through the urethroscope, and out at

Correspondence.

The Empirical Use of Counter-Igritants.. 359

1892; false conception; fleshy mole; pains quite severe and considerable flowing. After giving a few doses of the corn ergot the pains became weak and finally ceased, but not until the os was sufficiently dilated to easily permit of emptying the uterus of its contents. Good recovery.

CASE VI.—Mrs. P.; multipara; confined October 14, 1892; had light pains during the two preceding days. Was called on the morning of the 14th; pains irregular and light; os about the size of silver quarter dollar, soft, and dilatable. In the latter part of the afternoon the pains became more frequent and harder. At 7 P.M. they were quite severe, and about ten minutes apart; the os dilated to the size of a silver dollar. The patient was weak and bearing the pains badly. At 8.40 P.M. I gave about 4 grains of quinine, and twenty-five minutes later gave ½ drachm of ergot. In half an hour the pains increased in strength, and labor terminated in forty minutes from the giving of the ergot. In the last labor previous to this patient was very sick for twelve hours. Made a good recovery.

CASE VII.—Mrs. C.; confined November 3, 1892; abortion; considerable pain and flowing; os dilated and membranes protruding; gave ½-drachm doses of ustilago. The fœtus was soon expelled sufficiently to be easily delivered, pains ceased, and patient made a good recovery.

CASE VIII.—Mrs. H.; multipara; confined January 3, 1893. Called about 5 P.M.; had light pains all day. For an hour pains have been harder; about ten minutes apart. Gave about 40 drops of the ustilago, and repeated every half-hour for three or four doses. In from thirty to forty-five minutes the pains became more frequent, and continued strong and efficient until delivery, which took place one and a half hours later. Patient recovered better than usual, this being her ninth confinement. She remained in bed but thirty-six hours, then got up and went about her household duties.

CASE IX.—Mrs. F.; primipara; confined January 12, 1893. Patient very nervous; hysterical; pains strong, but progress slow. Gave ½-drachm doses of corn ergot every half-hour till three doses were given. Pains became more endurable and patient less nervous; os now fully dilated, and labor terminated in less than an hour from last dose of ergot.

CASE X.—Mrs. L.; multipara; confined January 14, 1893. Patient always very sick in her confinements. Called at 8.15 P.M.; gave at once ½ drachm of corn ergot. The pain was continuous, the patient very nervous, and bore the pains without patience, crying out

continually. Repeated the ergot about every thirty minutes. The pains became harder, but for an hour little or no progress was made, and I finally resorted to the use of the forceps.

CASE XI.—Mrs. P.; primipara; confined February 5, 1893. Called at 11 P.M.; very little dilatation; gave ½-drachm doses of ustilago thirty minutes apart for three doses. Pains became weaker and less intermittent. Patient very nervous. Gave chloroform, when the os dilated more rapidly. Labor terminated at 4 A.M.

CASE XII.—Mrs. L.; primipara; confined March 3, 1893. Called about 6 P.M.; very little dilatation; pains ten or fifteen minutes apart. Waited until labor had progressed farther, then commenced the use of ½-drachm doses of the ergot. No improvement in the progress, and was compelled to deliver finally with forceps at 5 A.M.

To recapitulate: In those cases where the pain was continuous the effect of the drug was to make it intermittent and more easily borne. Where natural labor-pains were present and the ergot was administered, the effect seemed to be a strengthening of the contractions and a hastening of the labor to termination. effects of the drug seemed to be more favorable when given after considerable dilatation had occurred, though it was administered at all stages. After the ninth case negative results were obtained. In the eleventh case the pains seemed more irregular and weaker after administering the ergot. The fluid extract used had at this time been kept about eight months. Whether a fresh article would have changed the results, I cannot say. In no instance did any bad results follow the use of the ergot which, in reason, could be ascribed to its action. Further use of the drug is necessary to determine its actual limits of usefulness.

CORRECTIONVILLE, IOWA, March 20, 1893.

A CASE OF UNUSUAL ACQUIRED TOLER-ANCE TO NITRO-GLYCERIN.

By George Evans Reading, M.D., Woodbury, N. J., Secretary and Treasurer of the Gloucester County Medical Society; Member of the American Medical Association.

IN October, 1891, I was called to see Mrs. Mary B., aged fifty-seven, who was suffering from severe vertigo to such an extent that she was unable to assume the erect posture without falling over unconscious. I elicited a history of such attacks, extending over a period of about two years, and associated with dyspeptic symptoms. She had been treated symptomatically for both the vertigo and dyspepsia,

but had grown steadily worse, the attacks becoming both more frequent and more severe.

This history led me to suspect some common underlying cause, and, together with her age, led me to interrogate the urinary function.

In answer to my questions, I was told that she had been in the habit of getting up nights to pass water, this dating from about the same time as the attacks of vertigo, or perhaps before.

After prescribing for the present attack, I left orders that the urine passed during the next twenty-four hours should be collected, measured, and a sample sent to me.

The family reported next day that the quantity of urine passed was five quarts, and the sample brought to me was as clear as springwater, and had a specific gravity of only 1002, without any trace of albumin. On this I made the diagnosis of chronic interstitial nephritis, and placed her upon nitro-glycerin (gr.  $\frac{1}{160}$ ) in solution before meals, and chloride of gold and sodium (gr.  $\frac{1}{20}$ ) after meals, with orders to gradually increase the dose of nitro-glycerin as tolerance was established. The dose of gr.  $\frac{1}{160}$  produced the typical physiological effect, but this soon wore off, and as the effect of any given dose became less, the dose was increased.

I was then using a two-per-cent. solution obtained from Robert Shoemaker & Co., of Philadelphia, and in the course of three months such a tolerance had been established that the patient was taking an amount of this solution equal to one grain of the pure drug. I then obtained a four-per-cent. solution from the same source, and ordered that the dose be still increased, the same rule being observed,—viz., that marked physiological effect be maintained.

On the exhaustion of this lot of four-percent. solution I made arrangements with the superintendent of the Repanno Chemical Company, which has a large nitro-glycerin and dynamite factory a few miles from this city, to supply me with a ten-per-cent. solution of the drug.

The increase of dose was steadily continued, until in less than one year from the time of beginning the patient was taking one teaspoonful of the ten-per-cent. solution at each dose, this being equal to six grains of the pure drug, and this dosage has been maintained up to the present.

Owing to the acrid character of such a concentrated solution, it is necessary to dilute it with from four to six ounces of water before taking, and it was due to this that I have kept the dose at its present size, fearing that any further increase might injure the stomach.

The effect upon the kidneys has been marvellous. From five quarts per diem the urine has decreased to four pints, and from a specific gravity of 1002, with no color and not even a urinary odor, it has increased to a specific gravity of 1018, and is of a natural color.

The attacks of vertigo gradually became less violent and with longer intervals between them, until now she has had none for several months. The indigestion has also practically disappeared, and the patient now attends to her own housework and takes in washing.

The chloride of gold and sodium has also been continued throughout the whole course of treatment, being increased in dose from  $\frac{1}{20}$  to  $\frac{1}{10}$  grain.

That there are many cases in which this truly gigantic dose of nitro-glycerin can be attained I do not believe; but I put this case on record to emphasize the fact that, to secure the good of which the drug is capable in this disease, it must be pushed to the utmost tolerance of the patient, whatever that dosage may be, and we must not rest content with ordinary doses if we find that they do not produce the effect aimed at.

#### COLOTOMY.

A CLINICAL LECTURE ON DISEASES OF THE RECTUM, DELIVERED AT THE NEW YORK POST-GRADUATE HOSPITAL.

BY CHARLES B. KELSEY, M.D.,
Professor of Diseases of the Rectum in the New York Post-Graduate Medical School.

ENTLEMEN:—I have here a patient I wish you all to see. She is an example of the truth of many things I have been trying to impress upon you. It is a year since she has presented herself at the clinic, which is a significant fact, as she has an artificial anus in the left groin, and I will first explain the case to you, and then we will ask her a few questions as to her condition.

You see she is still a young woman, perhaps twenty-three. When I first saw her, two years ago this month, she was indeed an object of pity. She had just come out of one of our large hospitals, where she had been for a long time under treatment for ulceration of the rectum, without benefit. She was discouraged; in fact, hopeless. She was suffering greatly with pain and loss of sleep; she was emaciated and rapidly losing ground; and being tired of life, had just taken a dose of Paris green. Against her will she was saved from death in this way, and then came under my care.

On examination, I found at the anus, and

extending up into the bowel, a large alcer. It covered about half the circumference of the rectum, and reached higher than the length of my index finger. Involving the margin of the anus, as it did, it was more than usually painful. It had a hard base, there was a good deal of destruction of tissue in depth; and my first opinion was that it was malignant in character. This, of course, it was not, or the patient would not be here in the condition you see her to-day. Probably it was syphilitic, possibly chancroidal. I do not know. It only proves that even with considerable experience an off-hand diagnosis of the nature of ulceration of the rectum is not always possible. When you can get a good history in connection with the clinical appearance, you can often make a correct diagnosis where examination alone may not be decisive.

For instance, a cancerous and a syphilitic stricture may present the same signs to the touch, but if the patient convinces you that the disease has existed five or six years, the diagnosis is easy.

Supposing the case to be malignant, I still did not extirpate, because the limit of the ulceration could not be reached, because it involved Douglas's cul-de-sac, and because I do not like to extirpate the rectum in women for cancer which has probably involved the peritoneum. I believe with Cripps that where the peritoneum has once become involved the results as to speedy recurrence are bad. This, you will see, has nothing to do with the question of opening the peritoneal cavity. It is simply that the peritoneum in women is much like the base of the bladder in men; when either is involved in cancer of the rectum the case is not a good one for extirpation.

We therefore did a colotomy, and now, two years later, you have a chance to see just how miserable a patient with an artificial anus often, nay, generally, is. When operated upon she weighed one hundred and nineteen pounds. Now she says she weighs one hundred and thirty-nine. I ask her why she wants to see me, and she explains that there is still a little bloody slime escaping from the natural anus once a day only, when she has her evacuation from the groin in the morning. I ask her how the artificial anus acts, and she says it takes her an hour and sometimes two in the morning to be sure that all the fæces have escaped for the day; but that, when once through, she never has any further movement till the next day; that she is then perfectly comfortable, goes where she pleases, and does all her own housework. This is not as favorable a report

as we often get. In many cases the bowel will act quite naturally in the morning. She tells me also that she generally has five minutes' warning of the approaching movement, and this is quite common, and is due to the involuntary commencing peristalsis which always is the first step in normal evacuation.

Now let us examine first the rectum and then the artificial anus. She tells us she can no longer wash out the rectum by enemata from below, because the point of the syringe will not enter. The end of the index finger will not enter. There is a firm stricture just at the The little finger will, however, pass anus. this, and then we find a second, firmer and more extensive than the first. This is the natural consequence of the cicatrization of the ulcer, which has been brought about simply by diverting the course of the fæces.

Looking at the artificial anus, you see a small, pointing mucous orifice which you can easily cover with a fifty-cent piece. There is no protrusion, no erosion, no pain. Examine it more closely, and you will find that it has two distinct openings separated by a distinct spur. The upper or proximal one admits the index finger, the lower or distal one only the little finger. You see how impossible it is for fæces to escape from one, cross over the spur, and enter the other; and this is the great point of advantage in the inguinal over the lumbar operation.

A colotomy is successful just in proportion as it does this very thing,—prevents the passage of fæces past the artificial opening. This cannot always be done in the lumbar incision. Bryant fails to do it, he says, in one-quarter of his cases. In the inguinal incision a failure of this kind is unnecessary if the operator understands the operation, for here we have the gut at command. It can be sharply bent upon itself, and a good spur thus formed. In the lumbar incision, on the contrary, the gut cannot be drawn out of the body; it must be opened and stitched where it lies; and there is no chance to form much of a spur. Were it necessary, the gut could be cut across and the distal end invaginated and dropped into the pelvis in the inguinal operation, and the passage of fæces thus absolutely prevented; but there are several objections to this procedure. In the first place, it would be awkward for the patient to drop the wrong end, and yet without a good deal of trouble it is impossible at the time of operation to be perfectly certain which is proximal and which distal. The sigmoid has many curves, and though generally, if caught and opened as it lies, the upper part

will be the proximal, it is not always so, and there may be nothing to indicate that a change has occurred in its natural direction. With the operation which we do here it makes no difference, and when the first evacuation occurs we sometimes find it, though not often, coming from what was intended to be the distal opening. Had this end been invaginated and dropped, the results would be disastrous.

Again, this invagination not only adds just so much to an operation in which speed and the avoidance of shock is often of great importance, but it prevents doing what I always desire to be able to do,—wash out the distal portion of the gut by enemata from the artificial anus downward. In this way all fæces in the gut below the site of the incision can best be removed, and the part kept free from the accumulation of pus and blood, which, in any case of ulceration, will keep up constant pain and tenesmus. Although this patient cannot introduce the syringe by the anus and wash out the bowel in the natural way, she has no difficulty in washing it from the artificial opening downward.

And now we come to the real reason of the patient's visit. The rectum, as she says, no longer troubles her. She thinks she must be nearly well, and she would like to have the artificial anus closed and go back to the old order of things.

Can this be done? Not in this case, though it could in many. The mere closure of the artificial anus here would be an easy matter. It would hardly be necessary, I think, to loosen up the ends of the gut. The spur could be destroyed by a clamp, or in any one of several ways, and after that the opening could be covered by a flap of skin, as I have described fully in my work on the rectum. But the effect of re-establishing the flow of fæces would only be to put the patient back where she was when operated upon. A rectum which has undergone such extensive destruction as this can never again be made a useful one.

In closing an artificial anus of such long standing as this, it must also be remembered that the distal portion of gut soon becomes atrophied from disuse. In this case it is reduced in all probability to a slender tube the size of my finger, and before operating time must be devoted to regaining the normal calibre by means of enemata. Large injections of milk should be made daily and allowed to remain. In this way nutrition is encouraged and the gut is mechanically distended, so that when the fæces are again turned into it its normal function is established.

The question naturally arises, whether, in the light of what we now know, that the ulceration was not malignant, any better treatment could have been followed than the formation of an artificial anus. Would this woman be any better off now had we resected the ulcer? I think not. Resection would have been a much graver operation, and the after-condition no better. To be sure, had she gone through it without accident, she would not have had an artificial anus in the left groin, but she would have had one in the perineum, and one in the perineum might not have been near as goo'd as that she now has. This is a point always to be remembered. By taking a great risk, and doing an operation with a twenty-per-cent. mortality, we may preserve the anus somewhere near where it is placed by nature; but we seldom get any more useful anus than this, for in almost every case of resection of the rectum the result is either stenosis or incontinence. Stenosis you will seldom get after colotomy, and when you do get it it may easily be overcome by dilatation. Stenosis in the perineum after resection is very different, and the firm cicatricial tissue may be very hard to dilate. The result of resection is often a mere fæcal fistula in the perineum, which is very hard to manage, and may in itself be a good cause for a subsequent colotomy.

The opposite condition of incontinence which you get in both operations may be troublesome or may not, depending upon the consistency of the fæces and the regularity with which the bowel can be made to act. It has always seemed to me that a risk of twenty per cent. was a heavy price to pay for the choice between an artificial anus in the perineum or over the sacrum and one like this in the left groin,—that is, of course, in non-malignant disease. In cancer, where we are striving to save life by removal of the disease, the case is different.

But now you have a chance to see for yourselves how much truth there is in the old idea that a patient with an artificial anus might as well be dead as alive; how loathsome they are to themselves and those with whom they come in contact.

Here is a woman fat, strong, happy; able to do whatever she pleases; free from pain. Naturally she would like to have the artificial anus closed; but when I tell her that closing it would be likely to put her back where she was before, her answer is very decided that she will stay as she is. And this is no unusual history. On the contrary, it is the ordinary result. I have many of these cases in the city and around

the country, but you will not often see them here. I caught one in the waiting-room the other day, and tried to get her to come before you; but she assured me she was all right, and had only come to the hospital with a friend. I get reports from them occasionally in one way or another, but seldom any complaints. The operation is not always as satisfactory in malignant as in non-malignant disease, because in the former the cancer is left, and there is apt to be some pain in spite of the artificial The relief is comparative rather than absolute. The great cause of suffering and the great danger to life is removed, it is true, but there is still suffering sometimes from pressure of the growth and involvement of the adjacent parts, if not from the passage of fæces. But even in these cases I have never seen a patient who was not grateful for the amount of relief obtained.

THE DEADLY AND MINOR POISONS OF TOADSTOOLS.

BY CHARLES McIlvaine, Honorary Member of the Salem County Medical Society, Haddonfield, N. J.

I USE the word toadstool as covering visible fungi and as distinguishing certain forms of fungoid growth from the microscopic. While many of the microscopic fungi number their human victims by the thousands, and are further reaching than co-conspirators of the visible sorts, their efforts are better understood by the medical profession than those belonging to the higher orders of which I shall exclusively write.

To Mr. Julius A. Palmer, of Boston, is due the segregation of the amanita—the aristocrats of the fungoid world—as the only mortal toadstool foe of man. To Dr. J. E. Shadle, of Shenandoah, Pa., must be given credit for describing the actual contact in the human system of atropine with the amanita poison.

The writer was fortunately enabled by these cases of Dr. Shadle to name the toadstools putting in their deadly work, and for the first time positively naming their foil face to face with them to the medical profession (see *Medical and Surgical Reporter*, "Amanitine and its Antidote," McIlvaine, December 12 and 19, 1885).

While atropine had been designated by such a writer as Dr. Gautier, Paris,\* as a probable, certainly a theoretic, antidote for toadstoolpoisoning, it had never before been called

upon to sustain its prognosticated reputation. Here is the best place to say that poisoning by amanitine must be met heroically by the subcutaneous injection of atropine, beginning with  $\frac{1}{60}$  grain, and continuing until  $\frac{1}{20}$  grain is administered; more, if necessary to save life.

It is unfortunate that the authorized dispensatories and pharmacopoeias have settled upon muscarine as the name for this powerful alkaloid. The Agaricus muscarius is a member of the family of amanita. Its alkaloid is the base of the well-known fly-poison. Bulbosine, muscarine, are but family derivatives. All possess the same qualities, and should bear the family name,—amanita, amanitine.

Among peoples but little attention would be drawn to the amanita family, did it not so closely resemble the members of the common mushroom clique. To those familiar with both families there is not even a cousinly resemblance; but to those who believe themselves positive in their knowledge of "the only mushrooms fit to eat" there is a dangerous nearness.

In this paradoxical resemblance lies the prominence given to the amanita family, because of its seductive beauty and the fatal mistakes made in eating of its members.

All of the amanita have distinguishing marks. They wear royal robes of certain cut. They are all umbrella-shaped. They all spring from a volva. Fragments of this ruptured sheath are frequently found upon the upper surface of the spread cap. About the base of the stem—generally bulbous—stays the principal part of the envelope from which they have burst. Up the stem, near the top and just under the white gills, is a ring surrounding it. Sometimes this hangs as a plaited skirt about the stem. Sometimes it is merely indicated by a yellow stain.

All of the amanita, being white-spored, have white gills. The common mushroom, being purple-spored, has pinkish gills in youth, which increase in depth of color as the spores ripen to a heavy purplish black. The amanita are choice in their habitat. They live in wooded depths or on the margin of timber-lands. I have never found them in open fields and meadows. On the other hand, the common mushroom is never found in woods. It lives in the open. If these distinctions of growth and habitat could be impressed upon the public there would be no more cases of amanitine-poisoning.

The physician called upon to treat a case of toadstool-poisoning need not wait to query after the variety eaten; he need not wish to see a sample. His first endeavor should be to ascertain the exact time elapsing between the

eating of the toadstool and the first feeling of discomfort. If this time is within four or five hours, one of the minor poisons is at work, and rapid relief will be given by the administration of an emetic, followed by one or two moderate doses of sweet oil and whiskey in equal parts. Vinegar is effective as a substitute for oil. If from eight to twelve hours have elapsed, the physician may rest assured that amanitine is present, and should administer  $\frac{1}{60}$  grain of atropine at once.

No stomachic troubles follow immediately the eating of the poisonous amanita. Digestion occurs without complaint.

It is possible that indigestible or mildly poisonous toadstools may have been partaken along with the amanita. In this case the time and symptoms would indicate the fact, and they should be eliminated from the system by the means mentioned. The patient should then be watched for the appearance of changes due to the more virulent poison.

One of the first symptoms is a peculiar ashy pallor of the complexion. The complete symptoms are fully and cannot be better given than in a letter from Dr. J. E. Shadle, of Shenandoah, Pa., to the writer, written immediately after his treatment of a family of five persons who were poisoned by eating of the *Amanita vernus* and *Amanita bulbosus*, among several clustered varieties not poisonous. The amanita do not grow in clusters, but singly.

SHENANDOAH, PA., October 26, 1885.

Mr. Chas. McIlvaine:

MY DEAR SIR,—In compliance with your request, I take pleasure in submitting to your consideration the following report of five cases of toadstool-poisoning which recently came under my observation and treatment:

On Monday, August 31, at 10 A.M., I was hastily called to see a family, consisting of Mr. F., his wife, his mother-in-law, Mrs. R., and his brother-in-law, Thomas R., who, the messenger stated, were having "cramps in the bowels."

Promptly responding to the call, I found them suffering from intense abdominal pains, nausea, vomiting, boneache, and feelings of distress in the *pracordial* region.

Mr. F., twenty-nine years of age, was a miner by occupation, and had led an intemperate life. Mrs. F., twenty-two years of age, was a brunette, possessing a delicate body, and bearing a decided *neurotic* tendency. Mrs. R., forty-five years of age, was a small *nervo-bilious* woman. Thomas R., thirteen years of age, was a youth well developed.

While I was examining these patients, Mrs. B., forty years of age, a neighbor of the family, presented herself, manifesting in a milder degree the same symptoms. She was a tall, spare woman. Previous to their present attack of illness their general health was good; in none could signs of disease be traced.

Picture to your mind five persons suffering from cholera morbus in its most aggravated form, and you will be enabled to form a pretty correct idea of what I beheld in the Faris residence on Monday morning, August 31.

That five individuals, four being members of one household, should be attacked simultaneously by a similar train of symptoms, naturally gave rise in my mind to a suspicion that something poisonous had been eaten. Upon close inquiry I obtained the following history:

On the afternoon of Sunday, August 30, Mr. F. and Thomas R. were walking through a woods not far distant from their home, and, in wandering from place to place, found clusters of very beautiful toadstools growing abundantly under trees, among which the chestnut predominated.

Attracted by their appearance, and supposing them to be edible, they gathered a large quantity, with the anticipation of having a delicious dish for their Sunday evening meal.

Various other kinds were growing in the same locality, but this particular variety impressed them as being the most inviting. A correct specimen of the *fungus* they had collected having been sent you, I will leave its botanical description to your pen.

At about nine o'clock, five hours after gathering them, Mrs. F. cooked three pints of the toadstools, stewing them in milk, and seasoning with butter, pepper, and salt.

They had dinner at a very early hour on this day, and by the time they had supper all felt exceedingly hungry, in consequence of which they ate quite heartily. Mrs. F. and her brother vied with each other as to the quantity they could eat. In addition to this dish, bread and butter and coffee were served.

Soon after supper the family retired. None experienced the least discomfort until towards daybreak, when considerable distress in the abdominal organs and cerebral disturbance manifested themselves. Prominent among the initial symptoms were foul breath, coated tongue, pain in the stomach, nausea, and a peculiar sickening sensation in the epigastrium. These symptoms gradually increased in severity, and in twelve hours after the ingestion of the poison, when I made my first visit, the

condition of the victims involved great danger. Intense vomiting was present in four, while in Mrs. R.'s case a violent retching seemed to persist.

Gastro-intestinal irritation, followed by a relaxed condition of the bowels, showed itself in about thirty hours after the onset of the more active symptoms. With the appearance of this trouble an insufferable tenesmus developed. producing paroxysms of severe agony. This was particularly true in the case of Mrs. R., whose suffering was so great that it became a formidable symptom to combat. Upon the subsidence of the more severe symptoms, the patients fell into a state of extreme prostration. accompanied by stupor and cold extremities. In the mother, son, and daughter this was profoundly marked. They were completely indifferent to persons and things around them, as well as to their own suffering.

As the symptoms increased in violence, Thos. R. advanced into a state of coma, and Mrs. F. into coma vigil, and remained so for about twelve hours prior to death. The face had a shrunken and wrinkled appearance, the eyes were sunken, the skin was dusky, and the surface of the body was dry and cold to the touch. The pulse, a number of hours before death, was imperceptible at the wrist, and the heart-sounds were scarcely perceived by auscultation.

The pulse in all cases was notably affected, ranging from 120 to 140 per minute. In character it was soft and compressible; intermittent at intervals.

There was a distinct rise of temperature; the thermometer in the axilla registered as much as 140° F.

A mild form of delirium was an occasional event. In the case of Mrs. F. it formed an important element.

Respecting the special senses, it is well to mention that sight was peculiarly affected. Notwithstanding the fact that the pupils responded kindly to the action of the light, an unpleasant sensation of blindness frequently appeared, and continued for a few minutes.

In spite of all that was done to counteract its ravages, the effects of the poison were so extremely deadly that a fatal issue was the result in two cases. Thomas R. died in fifty-six and Mrs. F. in sixty-three hours after the ingestion of the toadstools.

Treatment.—The treatment instituted was mainly symptomatic.

Fearing that undigested particles of toadstools might still be lying in the gastro-intestinal tract, to Mrs. R., who had not freely vomited, an emetic was administered, and to the rest a mild purge.

An intense thirst and a burning sensation being present in the mouth, throat, and stomach, small pieces of cracked ice were freely used with a view to allaying it.

For the gastro-intestinal irritation I prescribed with satisfactory results the following:

B Bismuth subnit., 3v;
Creosote, gtt. xv;
Mucil. acaciæ, f3i;
Aq. menth. pip., q.s. ad f3iii. M.
Sig.—Teaspoonful every one or two hours.

1/8 grain of morph. sulph. was administered hypodermically to alleviate as much as possible the abdominal suffering.

The impending exhaustion and the failing heart's action I endeavored to combat with a free administration of alcoholic stimulants in combination with moderate doses of tincture of digitalis both by the mouth and under the skin.

In order to invite the circulation of the blood to the ice-cold surface of the body, heated bricks and bottles filled with hot water were placed in bed around the patients.

Analyzing each symptom as it arose, and carefully observing the effects of the poison on the system, I formed the opinion that the toxic element contained in the noxious fungus eaten by these people was narcotic in its nature and spent its force on the nervecentres, especially selecting the one governing the function of respiration and the action of the heart.

Acting upon this conclusion, I began, in the early part of my treatment, subcutaneous injections of sulphate of atropine in frequently-repeated doses, ranging from  $\frac{1}{180}$  to  $\frac{1}{20}$  grain. The injections invariably were followed by a perceptible improvement in the patient; the heart's action became stronger, the pulse returned at the wrist, and the respiration increased in depth and fulness.

Through the agency of this remedy, supported by the other measures adopted, three (or sixty per cent.) of the patients recovered.

The lessons I draw from this experience are:

- 1. The poisoning produced by this variety of toadstools is slow in manifesting its effects.
- 2. That it destroys life by a process of asthenia.
- 3. That in atropine we have an antidote, and it should be pushed heroically from the earliest inception of the action of the poison.

I have the honor to remain yours very respectfully, J. E. SHADLE, M.D.

In reply to the queries, Was atropine administered in all the cases? and What was the total amount administered to each? Dr. Shadle responded as follows:

SHENANDOAH, PA., October 29, 1885.

MY DEAR MR. MCILVAINE:

Yours of the 27th I have received. The two questions you ask me therein I see are very important, and they should be answered as fully as possible. I am sorry I overlooked the matter in my report.

Before attempting an answer, it is well for me to note right here that Mrs. B., the neighbor, did not eat very much of the toadstool stew; Mrs. R. and Mr. F. each ate about the same quantity,—from one and one-half to two platefuls. This is according to Faris's statement. But the two fatal cases—Thomas R. and Mrs. F.—tried to see which could eat the most, and consequently got their full share of the poison. The cat mentioned before had about a tablespoonful of the broth, and they tell me she was very sick. Whether or not she died is not known.

Now as to the treatment by atropine, I think I can approximate a pretty correct statement in reply to your queries. Not knowing that atropine was considered an antidote, I began its employment in the treatment of these cases from the physiological knowledge I had of the drug relative to its action in other diseases in which there was heart-failure and embarrassed respiration.

When I saw the U. S. Dispensatory suggested it, I of course felt it my duty to use it, as I could find nowhere anything else mentioned as an antidote. I feel convinced that it was by means of the atropine that I saved three of the five patients. Why do I think so? Because whenever I would administer the remedy the patient rallied, the pulse returned at the wrist, the heart-sounds became stronger, and the respiration increased in strength and fulness. What more conclusive evidence do I want than this to show as to how the agent was acting?

When I first saw the patients—twelve hours after the ingestion of the poison—their symptoms were alike, one suffering as much as the other (August 31). I began the use of the alkaloid in the evening of the same day, when I saw the powers of life giving way, the heart failing, and the respiration becoming shallow. It was used in all the cases as follows:

Mrs. B., \(\frac{1}{180}\), \(\frac{1}{9}\), or \(\frac{1}{180}\), or \(\frac{1}{180}\), or \(\frac{1}{180}\), or \(\frac{1}{180}\) gr.

Mrs. R., \(\frac{1}{180}\), \(\frac{1}{9}\), \(\frac{1}{9}\), \(\frac{1}{9}\), \(\frac{1}{9}\), or \(\frac{1}{180}\) gr.

Thos. R.,  $\frac{1}{180}$ ,  $\frac{1}{90}$ ,  $\frac{1}{90}$ ,  $\frac{1}{90}$ ,  $\frac{1}{90}$ , or  $\frac{1}{180}$ , or  $\frac{1}{180}$ , or

Mrs. F.,  $\frac{1}{180}$ ,  $\frac{1}{90}$ ,  $\frac{1}{90}$ ,  $\frac{1}{90}$ , or  $\frac{9}{180}$ , or  $\frac{1}{180}$  gr.

In accordance with the above formulæ the drug was administered. I visited the patients at intervals of six or eight hours, and at each visitation they received an injection in the doses above mentioned. From this we see that in all Mrs. B. received gr.  $\frac{1}{86}$  of atropine; Mr. F. received gr.  $\frac{7}{180}$  of atropine; Mrs. R. received gr.  $\frac{7}{180}$  of atropine; Thos R. (fatal) received gr.  $\frac{1}{20}$  of atropine; Mrs. F. (fatal) received gr.  $\frac{1}{20}$  of atropine.

The alkaloid failing to save the two that died, I think can be attributed to one of two causes, or probably both:

- 1. That the use of atropine was begun too late and not used heroically enough.
- 2. That so much of the poison was taken up by the system in these cases that it became too virulent to counteract.

From the history of the cases, I know they ate by far the largest quantity. My opinion leans towards the first probable cause I have mentioned.

Another fact worth stating here is that the pupils never became affected by the administration of these doses.

Hoping this will make the matter satisfactory, I remain yours truly,

J. E. SHADLE.

The report of Dr. Shadle corroborates all former observations of the poisoning by amanita, in that the poison does not manifest itself until from eight to fifteen hours after ingestion, and the peculiar hue of the skin as one of its marked symptoms.

In relation to the latter, Mr. Palmer writes,—
"The absorption of the poison from the amanita may take place not only by ingestion, but by contact with the skin, as through the hollow palm of the hand or arm; by the lungs, as I have proven by personal experiments made upon myself. In such a case the patient has all of the symptoms of having eaten of the mushrooms, even to a peculiar leaden- or ash-colored complexion."

Many of the amanita are not only nutritious, but delicious. Of the nearly forty varieties, not over eight are known to be deadly.

In testing, by carefully eating of over four hundred varieties of toadstools, for their edible or non-edible qualities, by smelling, by absorption of the juice while dissecting, I have frequently felt and seen on my own face symptoms of amanitine-poisoning. My experiments upon dogs show that injections of minute quantities of an infusion in water or alcohol of any one of the poisonous amanita is fatal in from twelve to twenty hours, but that the fatal effects may be arrested at any but the final stage by varied doses of atropine. Similar results will obtain by the use of amanitine as an antidote for atropine. The difficulty I have encountered is in the separation of the alkaloid and obtaining solutions of known strength.

It should be borne in mind that the exhalations of those poisoned by amanitine are highly poisonous, and the urine as deadly up to the tenth or twelfth dilution, by passage through the human system, as the original poison itself.

Dr. Edward Jacob Forster, Boston, Mass., in an excellent monograph, entitled "Mushrooms and Mushroom-Poisoning," read before the annual meeting of the Massachusetts Medical Society, June 11, 1890, says, "The treatment by atropine is based upon a perfect antagonism which exists between this drug and the poison of the amanitas, which has been separated by Professor Schmiedelberg and named muscarine. The poison has been separated by others and variously named, according to the variety from which it was obtained. The merest trace of this alkaloid will arrest the pulsation of a frog's heart, and even after four hours Lauder Brunton states he has caused it to pulsate again by a minute quantity of atropine being brought in contact with the organ. This and other experiments showing the antagonism between these two poisons have been repeated by Professor H. P. Bowditch at the Harvard Medical It acts as well upon mammals as School. upon frogs."

The length to which this article has grown defers the relation of my experience with the minor poisons of toadstools to a future paper.

THE OPIUM AND SALINE TREATMENT OF PERITONITIS.

By M. H. FUSSELL, M.D., Instructor in Clinical Medicine, University of Pennsylvania.

ALL authors of to-day agree that idiopathic peritonitis is rare. A few contend that it does not exist, but that general peritonitis is always a symptom. In my experience I have not met with a case which could not be traced to some previous lesion. Since peritonitis is usually a symptom of some previous disease, no set treatment will answer for all cases. To

give salines to a patient who is suffering from a peritonitis caused by an incarcerated hernia would be as wide of the mark as to benumb a patient with opium who has a peritonitis from impaction of the bowels. It is necessary that a diagnosis of the cause be made before the case can be rationally treated. phase of the question I do not propose to deal. The great number of cases of peritonitis presenting themselves to the general practitioner, however, have as their cause some lesion insignificant in itself and entirely unaffected by medicinal treatment, and the disease presents itself simply as a case of peritonitis. The inflammation must be controlled before the cause can be reached. How best to gain that end is the question which confronts us all, and which I approach with becoming humility. When I left the halls of the University of Pennsylvania he who suggested any but the opium treatment was sneered at. Since that time the saline treatment has arisen, and has followers who declare that to give opium is death to the patient, and to omit purgation with salines is equally reprehensible. Both these treatments have able supporters, who give no quarter and desire none. I suffered from a severe attack of peritonitis, and recovered under strict opium treatment. Moreover, as a student, I was thoroughly imbued with the belief that this was the only rational treatment for peritonitis, hence I feel much like a deserter in suggesting any other method of treatment. My first cases of peritonitis were given opium until they were narcotized, were passably comfortable, and generally died. Nevertheless, I could never bring myself to the state of mind in which I could omit opium. Hence, in my later cases, I have constantly used a combination of salines and opium, and with the happiest results.

The following cases, taken at random from my notes, will illustrate what has been by far the most satisfactory method of dealing with the cases of which I speak. They all corresponded to the type of a general peritonitis, the cause of which could not be found at the time, or, if detected, could not be remedied.

CASE I.—Mrs. N., aged fifty-two, was attacked with symptoms of dysentery. She had frequent stools, and passed some blood and mucus. These symptoms were controlled by small doses of opium. Suddenly, on the evening of July 19, 1891, the patient was seized with excruciating pain in the ileo-cæcal region. This was controlled by a hypodermic injection of morphine. The next morning the pain was still severe, and the whole belly was tense and exquisitely tender; the pulse was quick and hard;

the woman was suffering much pain. She was ordered 1/2 ounce of Epsom salts dissolved in a half-glass of water, and a tablespoonful of this was given every half-hour. A hypodermic injection of morphine was administered to relieve the pain. The general condition of the patient was bad. There was considerable tenderness over the ileo-cæcal region, with resistance, while the whole belly was tense and tender. The patient lay on her back, with her thighs flexed. By the time the last of the half-ounce of saline was administered there had been two profuse watery stools. The belly became less tense and markedly less tender. The treatment after this was morphine hypodermically sufficient to keep the patient quiet, and salines sufficient to cause daily a large watery stool. Gradually the general inflammation decreased. The cause of peritonitis was demonstrated in a palpable, tender tumor in the ileo-cæcal region. The woman made a complete recovery.

CASE II.—Mrs. R. was seen in consultation. Her menses had been missed for two months. Three days before she came under observation she was seized with severe pain in the abdomen, simulating labor-pains. Shortly the whole belly became tense and very tender. On my visit a tumor was found, involving the right Fallopian tube. This was probably the cause of the trouble. The whole abdomen was distended and exquisitely tender, the patient screaming at the slightest touch. The bowels were constipated. As there was a specific history, and as the woman was pregnant and in fairly good condition, the treatment by hypodermic injections of morphine sufficient to control pain, and salines sufficient to cause large watery stools, was advised as the best means of combating the trouble. Laparotomy was decided against because of pregnancy and a specific history. This patient was afterwards seen by Professor B. C. Hirst, and the treatment continued. The woman made an excellent recovery.

Case III.—Harry R. was seized with severe "cramps" while at work in a mill. On examination, a tender swelling was found in the ileo-cæcal region. The patient lay with the knees drawn up and the whole belly tense and sensitive. A hypodermic injection of morphine was given and salines ordered. On the first movement of the bowels, which was profuse and watery, there was great relief. The general tenderness speedily disappeared, but there remained in the ileo-cæcal region a decided tumor, which was demonstrable for two weeks. The patient has since gone through a similar attack, and is at present suffering from a third. It is probably a case of recurrent appendicitis,

complicated, on at least two occasions, by a general peritonitis. A laparotomy will probably be required before definite cure.

These three cases—taken at random from a number of records which I have-well illustrate the set of cases to which I refer. Two were probably appendicitis, the third was certainly Fallopian disease, but in all three the one condition threatening life was the general peritonitis. I would repeat that this method of treatment will no more than any other supplant a rational operative treatment, but it is superior in my hands to the opium treatment alone. I have had no experience with a pure saline treatment, but to my mind the intense pain always demands an opiate. A combination of the two methods secures comfort to the patient from the opiate and depletion of the inflamed peritoneum from the saline. The opium is best administered hypodermically, since thus less of the drug is used. The saline I have always administered in a saturated solution, a halfounce of this being given half-hourly. Strict rest, of course, must be ordered, and a liquid diet prescribed.

These means may be supplemented by leeching when the case is seen early, and by application of a light poultice to the abdomen, or a cloth wrung out of hot water and covered with oiled silk.

In conclusion, I would state that the means best suited in my hands to the treatment of peritonitis are,—

- r. Diagnosis as to the cause.
- 2. Removal of the cause where practicable.
- 3. Hypodermic injections of morphine sufficient to control pain.
- 4. Administration of a concentrated saline solution until free watery stools are produced.
  - 5. Leeching and poulticing.

#### PRESCRIPTION FOR DIARRHŒA.

According to L'Union Médicale for November 1892, MENCKE employs the following prescription:

R. Powdered resorcin, gr. xv; Paregoric, m.xv; Distilled water, Ziii; Syrup, Zii.

A dessertspoonful of this may be taken every two hours.

In the case of children it is well to diminish the quantity of resorcin and of the paregoric, or a coffeespoonful of this mixture may be given every two hours.

## The Therapeutic Gazette

EDITED BY
H. A. HARE, M.D.,
GENERAL THERAPEUTICS.

With special departments under the charge of G. E. DE SCHWEINITZ, M.D., OPHTHALMIC AND AURAL THERAPEUTICS, AND

EDWARD MARTIN, M.D., surgical and genito-urinary therapeutics.

#### GEO. S. DAVIS.

Medical Publisher, Box 470, DETROIT, MICH.

Philadelphia, 714 Filbert Street,

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136 Gower Street, London. Price 10s. Remittances may be made either by Postal Order or Stamps.

Price to Foreign Subscribers direct (postage included), \$2.50 (reshillings). English postage-stamps received on remittances.

Editorial communications should be addressed 222 South Fifteenth Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

Authors will receive reprints in pamphlet form, without charge, provided the request for them be written on the articles sent.

Business communications should be addressed to the Publishers.

#### Leading Articles.

WHAT IS THE VALUE OF THE SALICY-LATES IN RHEUMATISM?

MANY members of the profession will at once answer the question which heads this editorial in favor of salicylates. Yet there are others, who are able to quote large statistics and wide clinical experience, who will state that they believe that the general confidence in the value of the salicylates in acute articular rheumatism is not justified by the results which are obtained from its administration.

Probably the correct solution of this mooted point lies in the subdivision of the action of salicylates on the various parts of the body. Under such circumstances there is no' doubt that the universal experience has been that salicylic acid or its salts produces a subsidence of the pain and swelling in the joints which are affected by acute articular rheumatism, and

that this result may be accomplished after but three or four doses, or certainly by the third or fourth day. On the other hand, the Collective Investigation Committee of the British Medical Association found that the average duration of pain was a little over ten days, while a collection made from the cases treated in the London Hospital barely exceeded five days. Be this as it may, the results of both these investigations, which aggregated something like twelve hundred cases, showed that the drugs caused an amelioration of the joint-symptoms. Similarly, salicylic acid produces reduction of the fever, and in many instances the febrile process, under its influence, only persists for two or three days. On the other hand, it must be remembered that every now and then we meet with cases in which the joint-symptoms and the fever resist all doses of the salicylates which we may give within the limits of safety.

So far, then, we may consider that on general principles two of the important symptoms of acute articular rheumatism are relieved.

On the other hand, there are certain complications which are so frequent and occur so early that they may be considered as symptoms or a distinct part of the disease in which salicylic acid probably effects but little,—namely, the appearance of cardiac manifestations of the action of the rheumatic poison. Of course it is true that salicylic acid, by shortening an attack of rheumatism, in that way indirectly protects the heart; but, at the same time, there is no evidence that it protects this organ from the actual presence of the disease process. In other words, it may prevent cardiac disease indirectly, but its administration in no way preserves the cardiac apparatus intact while the febrile symptoms last. This has been pointed out in a number of the standard works on medicine, and should be universally recognized by the profession, even though all its members may not be willing to admit that the statement is entirely true. Thus, in Stewart's article in the "System of Therapeutics," he points out that Hood, of London, in the treatment of 2200 cases of acute articular rheumatism appearing in both sexes under thirty-six years of age, noticed that there were a very large number of instances in which cardiac disease was produced. Thus, of 828 cases treated without salicylates, 500 had cardiac disease, whereas in 328 cases treated with salicylates, 190 had cardiac disease; or, again, of 360 cases treated with salicylates, 241 had complications, and in another series 316 suffered from cardiac disease out of a total of 515. In other words, in the cases treated by salicylates the aggregate of cardiac complications was somewhat over sixty per cent., while those who were treated by other measures had cardiac complications in a little less than sixty per cent. It is, therefore, evident that the salicylic compounds are no more effective in avoiding these unfortunate manifestations of the rheumatic poison than are the various other modes of treatment. This point is emphasized, too, by the fact that the percentage of cardiac disease in cases treated by the salicylates is about the general percentage of cases,-namely, between fifty and sixty per cent. It is also true that relapses seem to occur more frequently under the salicylates than under the older methods of treatment; perhaps because, when the older methods are used, the disease runs its course, or, as it were, exhausts itself, whereas the salicylates may alter its course before the system is thoroughly rid of the rheumatic poison.

To quote Stewart again: "Garrett has shown that the salicylates seem to have more effect upon the hyperæmic group of symptoms, as, for example, those manifested about a joint, than upon the fibrous symptoms, as, for example, those seen in endocarditis."

There are other points which might be discussed in regard to the value of salicylic acid in rheumatism, but these are, after all, the most important. In view of the recent studies of Haig and those of other investigators who have not been so thorough in their methods of research, we cannot doubt that this class of compounds, uniting with the uric acid, produce salicyluric acid, which is readily eliminated, and so directly or indirectly results in the amelioration of the rheumatic symptoms.

It is hardly in place in this editorial to consider the disadvantages which salicylates possess, so far as their untoward symptoms are concerned. That they are capable of producing disagreeable symptoms every one knows, but they probably do not cause difficulties to arise any more frequently than other drugs possessing medicinal power of great value. are instances of very severe symptoms, but, after all, these have been few and far between. Perhaps the most noteworthy of these was the case reported within the last few years in the London Practitioner, where the use of what might be called a very moderate dose of the salicylates produced petechial eruption and retinal hemorrhages, which latter resulted not only in temporary, but permanent blindness.

There are but two points in regard to the use of salicylates in rheumatism which, we think, should be particularly emphasized, and these are, 1, that the physician, after once deciding

to administer these remedies, should give them in large doses or not at all,—that is, to use no less than 40 to 80 grains a day; 2, that if, after administering the drugs in this way, no amelioration of the symptoms of any note has occurred at the end of four or five days, that it is useless to continue this line of treatment, as little good will be exercised over the rheumatic process, and much harm will be done by saturating the patient with such irritants to the kidneys and stomach as are the class of the salicylates.

## THE INSTILLATION TREATMENT OF GENITO-URINARY DISEASES,

THE term instillation, as used in genitourinary surgery, implies the local application of a medicinal solution to inflamed spots of the urethra or bladder by means of an injecting syringe with a long nozzle, usually eight inches or more in length.

Lallemand, in the early part of the present century, wrote enthusiastically upon the curative effect of solid nitrate of silver applied to chronically inflamed areas of the urethra, particularly in the prostatic urethra, by means of an instrument termed the porte-caustique. He reported many obstinate cases as cured by this treatment. These applications became extremely popular, but ultimately fell into disuse, probably owing to the fact that insufficient knowledge of the relations between symptomatology and pathology led to the application of the remedy in unsuitable cases, and did more harm than good. Aside from the direct inflammatory symptoms excited by Lallemand's applications, it was alleged that other and more serious results followed. Thus one distinguished surgeon of the time asserted that Lallemand was responsible for more eunuchs than were the requirements of the Turkish harems, the porte-caustique occasioning sterility by inflammatory obliteration of the ejaculatory ducts.

After the practical abandonment of the application of the solid stick of silver nitrate, attempts were made to expose diseased spots by means of the endoscope, and to apply medication by pledgets of cotton wet in the required solutions.

The recent ingenious electric urethroscopes, and particularly those of Otis and Leiter, have rendered this an easy, safe, and efficient treatment in chronically inflamed patches of the anterior urethra. In the treatment of disease of the posterior urethra, however, the introduction of a straight tube often inflicts so much damage

to what is termed the fixed curve of the urethra, that the beneficial effects of applications are more than counterbalanced by subsequent traumatic inflammation. It is particularly in these cases—i.e., cases of chronic inflammation of the posterior urethra and the neck of the bladder—that the instillator is most valuable.

Guyon (International Medical Magazine, vol. ii., No. 3) claims the credit of introducing this instrument and formulating the method of treatment. The apparatus he employs is a flexible, olive-tipped catheter, with a minute opening at its bulbous end; the other end receives the nozzle of a syringe. The syringe employed is similar to that used in hypodermic medication. It should be large enough to hold about two teaspoonfuls. nozzle has a thread fitting into the catheter, and the handle, instead of pushing in, is made to turn in the barrel, each half-turn forcing out a drop of solution from the bulbous end of the bougie when this instrument and the syringe are fitted together.

Guyon commends the use of this instrument for diseases of the anterior urethra, but in such cases the majority of surgeons prefer to employ the electric endoscope. In applying instillations to the posterior urethra, he states that some urine should be allowed to remain in the bladder, unless the neck of this viscus is to be medicated, in which case the patient should urinate immediately before the application. He introduces the bulb of the soft instrument until the resistance of the compressor urethræ muscle is felt; the bulb is pushed a little beyond this, and the syringe is attached and the injection made. Afterwards the bougie is withdrawn.

He employs two classes of substances,—namely, those intended to prevent pain, such as morphine and cocaine; and those designed to modify the mucous membrane. For modifying the mucous membrane, nitrate of silver is the remedy of choice. It is employed in solutions of from two- to ten-per-cent. strength. Corrosive sublimate is employed in the strengths of 1 to 5000 to 1 to 10,000. It should be dissolved in boiled water.

The indications for the instillation treatment are afforded particularly in cases of urethrocystitis; 15 to 20 drops of a two-per-cent. solution of nitrate of silver should be used every two days. After twelve to fifteen instillations the cases are mostly cured. If not, treatment is stopped for two or three weeks; then a new series of stronger treatments is instituted. In some cases the symptoms are aggravated, and here it is often found that the inflammation is tubercular in nature.

The instillations are particularly valuable in acute and chronic cystitis. Frequent urination, pain, and the symptoms due to gonorrhœal cystitis yield more quickly to instillation than to any other treatment. The bladder should be entirely emptied before the injection is made, and from 20 to 30 drops of a twoper-cent. solution should be used. The treatment should be repeated every two or three At first there may be hæmaturia and aggravation of symptoms, but after two or three treatments relief is marked and cure rapidly follows. In the chronic forms of cystitis irrigation may be used in addition to the local treatment; but in all extremely painful cases instillation treatment will yield the best results.

In tubercular troubles nitrate of silver is dangerous, greatly aggravating the symptoms. Here 20 to 30 drops of bichloride of mercury of the strength of 1 to 5000 at first, and increased to the strength of 1 to 2000, the quantity of the injection being proportionately lessened, will sometimes be followed by satisfactory results. Neoplasms always contraindicate instillations.

According to Guyon, nitrate of silver and bichloride of mercury are practically the only remedies to be used. Other surgeons, however, as Ulzmann, and Keyes, Letzell, and Finger, obtain satisfactory results. from sulphate of copper, used in the strength of twoto ten-per-cent. sulphate of zinc, thalline, ichthyol, and a number of other remedies. In certain chronic cases, instillation of 6 to 8 drops of iodine and carbolic acid, equal parts of each, will be followed by rapid improve-The nitrate of silver is particularly indicated in gonorrheal cases, as pointed out by Guyon; its employment in the cases of acute posterior urethritis, accompanied by perineal pain, frequent urination, tenesmus, and the passage of blood, will sometimes bring about a more rapid relief of suffering than opium suppositories, hot baths, or all the other means of treatment in common use.

The bulbous bougie referred to by Guyon is not the most popular instrument. Ulzmann's long, cylindrical rubber catheter, provided with an almost capillary canal, attached to a hypodermic syringe, or Keyes's modification of this instrument, are those commonly employed. The lubricant used in these cases should be glycerin, since cosmoline or oil may so coat the urethra that the medicament is not brought in contact with the mucous membrane.

The popularizing of the endoscope for the treatment of granular patches of the anterior urethra and a general recognition of the indications for the use of instillations have been responsible for the cure of more cases of chronic urethritis than all other modern methods combined.

#### TUBERCULAR IRITIS AND ITS TREATMENT.

UBERCULOSIS of the iris, as generally described, occurs in the form of miliary growths (disseminated tuberculosis), or as a The dissingle neoplasm (solitary tubercle). seminated variety, consisting of the development of small grayish, translucent bodies, may be confounded, so far as its clinical characteristics are concerned, with nodular formations in the iris of non-tubercular origin,—the granulomata of some authors,—or with the deposits which have been occasionally seen in leukæmia. or have arisen under the inflammatory action caused by a foreign body entering the anterior chamber. Finally, it may be difficult to differentiate them from syphilitic papules, although the latter are crossed by blood-vessels, while in tubercles these are absent or but sparsely present.

The absolute diagnosis of tubercle of the iris. would seem to depend upon bacteriological examination and the demonstration of the bacilli characteristic of the disease, or upon inoculation experiments performed on rabbits' eyes. Some recent communications, however, maintain that the relation of tuberculosis to disease of the iris is much more common than we have been led to suppose, and the crucial test of finding the specific product of tubercle is not necessary to establish the identity of the disease, because in a number of instances, in the absence of the bacilli, the subsequent conduct of the affection, as well as general examination, have cleared away all reasonable doubt as to the nature of the morbid process in the iris. At least one author is willing to ascribe a tubercular origin to many examples of chronic iritis, with moderate or severe inflammatory manifestations, accompanied by the deposition of precipitates on the posterior layer of the cornea.

Disregarding for the moment those cases which are of doubtful character, and returning to such forms, either disseminated or solitary, which with reasonable certainty may be diagnosticated tubercular, the important problem for solution is the best method of treatment. Some years ago Dr. Hill Griffith ("Transactions of the Ophthalmological Society of the United Kingdom," vol. x. p. 84), with this point in view, analyzed thirty-two cases of tuberculosis of the iris gathered from the litera-

ture, some of which were recorded as primary, although the accuracy of this designation is not entirely free from objection, because, as Fuchs maintains, although tuberculosis experimentally induced in animals is primary, when it occurs in the iris of man it is usually secondary, that is, it arises from a tuberculous focus elsewhere in the body; a focus, moreover, which may be found, for example, in the glands, or may be inferred to exist in the intestinal canal, lungs, or bones. In Griffith's list there were three cases in which no operation was done, the first two dying of general miliary tuberculosis three and five weeks respectively after the onset of the eye-affection, and the third with symptoms of tubercular meningitis nine weeks after the beginning of the disease. Two cases, in spite of enucleation, died with symptoms of brain-disease after the removal of the eye, but these are the only two deaths among twentyseven cases in which the bulb was enucleated. Griffith further shows that iridectomy has not been productive of favorable results; in eight cases in which this operation was tried enucleation was required later on. Hence it is evident that if an operation is to be undertaken for tubercular disease of the iris, which, as he expresses it, is justified when the eye is practically lost, when there is danger of sympathetic ophthalmitis, or when the affection is rapidly progressive, this operation should consist of enucleation and not of iridectomy.

When it comes to dealing with cases in which the diagnosis is doubtful, or there is no tendency to speedy increase, or, even if the nature of the malady is reasonably certain, the vision is not lost, and its manifestations are moderate, operation should be deferred and an expectant plan of treatment pursued. Naturally the ordinary hygienic measures suited to tuberculosis suggest themselves; and among the medicinal agents, if the report of C. Quint (Centralblatt f. Prakt. Augenheilkunde, March, 1893) is to be trusted, creosote should find a prominent place. This observer, who is of the opinion that many cases of chronic iritis are really tubercular in nature, reports two examples of probable tuber. cular iritis greatly benefited by the exhibition of creosote. In the first case, lasting threequarters of a year in spite of various remedies (mercury, iodide of potassium, and salicylic acid), an iridectomy was performed, and the excised piece of iris planted in the anterior chamber of a rabbit's eye, resulting in three weeks in typical iris tuberculosis. The patient was then placed upon creosote in pills, beginning with .3 gramme (5 grains), and later .75 gramme (12 grains) p. d. After the use of 10

grammes (150 grains) during two weeks, improvement began; four weeks later, 30 grammes (450 grains) having been taken, improvement was marked, and at the end of five months the eyes were quiet, and vision in R. ½ and in L. 1. At the time of the report no relapse had taken place.

The second case, which occurred in a woman aged fifty-two years, presented appearances similar to the first one,—namely, yellowish deposits in the posterior layer of the cornea, which decidedly increased as time went on, moderate iritis, and, finally, intense streaky opacity of the cornea, the visual acuity sinking to the perception of the movements of the hand at three metres. The increase of the disease occurred in spite of the administration of mercury and other remedies. Therefore creosote was exhibited, and at the end of four weeks, during which time twenty-five grammes (375 grains) of the drug had been consumed, a very favorable change took place. The eye was nearly free from irritation, the deposits thinner and diminished in number, and the blood-vessels shrunken. At the time of writing, three-quarters of a year after the beginning of the disease and one-half year after the creosote treatment had been begun, the eve had been for a long time free from inflammatory symptoms, and the acuity of sight had increased to 1/4.

The reporter attributes the favorable result in these two cases to the creosote. tubercular iritis was proven by the inoculation experiment; in the other Quint believes it undoubtedly to have been present, in spite of the absence of experimental or other exact evidence, on account of the symptoms, which were closely analogous to those in his first case. He records the two cases and this experience with creosote in the hope that others may be induced to try the remedy, and may also report their results. In regard to the first case, if the inoculation experiment was carefully performed, there seems little doubt that the disease was truly tubercular, and as all manner of other remedies had first been tried and had failed, it is fair to attribute the success to the creosote. In the second case there may be reasonable doubt of the real tubercular nature of the malady, but none the less it also first showed evidence of improvement under the influence of creosote administrations, and this after other remedies had been faithfully tried. The use of this drug in pulmonary tuberculosis has attained a fair reputation, and consequently there is every reason to test its efficacy in those cases of iritis the clinical symptoms of which bring them into relation with tubercular disease.

Reports on Therapeutic Progress.

THE INFLUENCE OF MINERAL CON-STITUENTS OF THE BODY UPON IMMUNITY FROM INFECTIOUS DISEASES.

DR. LAUDER BRUNTON and MR. T. J. BOKEN-HAM contribute to the *British Medical Journal* for December 7, 1892, a short report upon this subject.

In the *British Medical Journal* of July 18, 1891, these authors narrated some experiments which they had made with potassium chloride administered to guinea-pigs with their food so as to saturate them, as far as possible, with the drug.

These experiments were made with the view of ascertaining whether such an artificial alteration in the mineral constituents of the body would alter its resistance to the attacks of an infectious disease. The results of our experiments showed us that saturation of an animal with potassium chloride in no way conferred immunity against anthrax; in fact, that the animals thus prepared died more rapidly than the control animals inoculated with the same virus.

In the present series the authors have tested the effect of feeding with salts of calcium, strontium, magnesium, and aluminium. The number of experiments is by no means large, but the results were so little satisfactory, and showed so little protective power on the part of any of these drugs, that it seemed undesirable to increase the number. Appended are the details of the individual observations.

Calcium Chloride Feeding .- On August 5, 1891, commenced feeding six guinea-pigs with calcium chloride in bran. They were fed daily for twenty-three days, and then inoculated with spleen pulp in broth, from a mouse dead of anthrax, obtained direct from a sheep by Dr. Martin. Inoculated also one guinea-pig which had been fed fairly regularly for about fifty-two days with calcium chloride bran. Inoculated at the same time two control animals: control one died between the forty-eighth and sixtieth hours; control two died in sixty-six hours. Fed animals: one died between the fiftieth and sixtieth hours, one died in sixty-five hours and a half, one died in sixty-seven hours and threequarters, three died between the seventieth and seventy-eighth hours.

On September 3 fed four guinea-pigs with calcium chloride (2½ grammes daily). Inoculated fourteen days after with anthrax (fatal

for mice in three days), and at the same time one control. At the end of forty-eight hours all went well. At the ninetieth hour three protected animals were found dead. The control animal was still living. At the one hundred and fourteenth hour the fourth protected animal was found dead, as was also the control. Result: No protection.

Magnesium Chloride Feeding.—On September 9, 1891, two guinea-pigs, which had received daily one gramme each in their food for ten days, were inoculated with subculture of anthrax (Dr. Martin) which had been passed through a mouse. In forty hours both were dead.

On November 4 we began to feed four guinea-pigs daily with .75 gramme of magnesium chloride. On November 21 they were inoculated with anthrax (broth culture, Dr. Martin's), as was also a control animal. On November 23 (fifty-two hours) one was dead; and on November 24, before the sixty-fourth hour, the others were found dead. Result: No protection.

Strontium Chloride Feeding.—Two guineapigs were fed daily with one gramme each of strontium chloride in solution for ten days. On September 9 both were inoculated with subculture of anthrax (Dr. Martin, through a mouse). One died in twenty hours, the other in twenty-four hours.

On November 4 four guinea-pigs began to receive daily doses of .75 gramme. On November 21 they were inoculated with anthrax (broth culture, Dr. Martin), as were also two control animals. On November 23 (fifty-second hour) one control and two of the other animals were found dead. On November 24 the second control animal was found dead (before the sixty-fourth hour). On November 25 the two remaining animals died (before the eighty-fourth hour).

Aluminium Chloride Feeding.—On November 7, 1891, we began feeding four guinea-pigs daily with .375 gramme of aluminium chloride. On November 21 they were inoculated with a broth culture of anthrax (Dr. Martin). On November 23 (fifty-second hour) two were dead; at the fifty-eighth hour another was dead. On November 24 the fourth was dead. Result: No protection.

It is interesting to note, in conclusion, that in no case were any ill effects produced by the drugs themselves, even in the enormous doses in which they were administered. The animals were all in excellent health at the time of their inoculation, and seemed to thrive on their alkaline food.

## THE TREATMENT OF MYXŒDEMA BY THE ADMINISTRATION OF THE THYROID GLAND OF THE LOWER ANIMALS.

We have already published in the Thera-PEUTIC GAZETTE reports of the treatment of this curious disease either by hypodermic injection of thyroid extract, by the transplantation of thyroid gland, or by the administration internally of the gland itself.

In the British Medical Journal for January 7, 1893, CORKHILL reports a case of myxcedema with enlarged thyroid treated by subcutaneous injections of thyroid extract, with recovery. 15 minims of the extract, prepared by Messrs. Brady and Martin, were given three times a week in the interscapular region. No untoward effects, local or general, followed.

In the same number of the British Medical Journal, MR. BABER also reports a case of myxcedema in which good results were produced by feeding with fresh thyroid gland. The method of administration consisted in mincing up a thyroid gland of a sheep, which was then mixed with anchovy paste and spread upon toast. This was washed down with a little brandy and seltzer. Another meal of the gland was taken two weeks later, and again at the expiration of a week; in all, three doses. Marked improvement was noted. Immediately after the gland was eaten, headache and depression followed in each case.

#### TREATMENT OF MYXŒDEMA.

In the London *Practitioner* for January, 1893, Dr. McCall Anderson reports a case of myx-cedema treated by thyroid extract. After pointing out that we generally find that remedies administered by the mouth are not nearly so prompt in their action as when they are given subcutaneously, he states that this rule does not seem to hold with regard to the use of thyroid extract. And it is fortunate if this be so, because its subcutaneous administration has serious drawbacks, some of which occurred in the case reported.

- 1. Subcutaneous injection occasionally gives rise to alarming symptoms almost immediately after the injection, such as tonic spasm and loss of consciousness, especially if the remedy is not introduced very slowly.
- 2. Indurations and abscess are apt to result at the seats of puncture, even when every care is taken. Thus, in the case just quoted, there were indurations which at one point terminated in abscess, accompanied by fever and other

constitutional symptoms, which interfered with the continuous administration of the remedy.

3. In order to prevent abscesses the treatment must be repeated from time to time, and this can be much more conveniently done when the extract is given by the mouth.

It would be premature to speak positively with regard to the curative effect of this new remedy. That it gives great relief and dissipates all the unpleasant symptoms in a comparatively short space of time is now placed beyond doubt. But the evidence so far tends to the conclusion that, after the treatment has been suspended for a time, there is a tendency to a recrudescence of the symptoms. And, in the nature of things, this is what we might reasonably expect, seeing that an atrophied thyroid is as little likely to be restored as an atrophied testicle. But even if it is necessary for patients to swallow a dose of the extract once a week for the rest of their lives, this is no greater evil than falls to the lot of many healthy persons, of having permanently to resort to the use of aperients for the relief of chronic constipation, and this is borne with equanimity.

So that, from whatever point of view we regard it, there can be no doubt that a valuable new remedy has been discovered for the relief of a very serious disorder, and one which may pave the way for similar discoveries in other fields.

#### ATROPINE NOT AN EFFICIENT ANTI-DOTE FOR OPIUM.

In Daniel's Texas Medical Journal for December, 1892, is an article published by Dr. DAVID CERNA upon this important subject. The conclusions which he arrives at are:

That belladonna does not antagonize the action of opium upon the respiration or the circulation, and he believes that the ingestion of atropine in the case of a human being poisoned by opium is as unwarrantable and disastrous as the administration of alcohol in excessive doses in accidents under chloroform or ether.

## EXCRETION OF MORPHINE BY THE SALIVA.

Leineweber, Marmé, Alt, and Lauber, in their experiments to determine the secretion and excretion in the animal organism of morphine injected subcutaneously, have thus far left the salivary glands entirely out of consideration.

Dr. Julius Rosenthal (Centralblatt für

Klinische Medicin, No. 1, 1893) has been making extended examinations of the saliva of patients treated with morphine, and now gives a few preliminary statements of his results. The Dragendorff process, which is somewhat complicated, but very reliable, he only used in examining large quantities. In other cases he made use of a simpler method, partly given by Autenreith, which seemed to him sufficient to determine the presence of the alkaloid in the This he will describe later. As final reaction, he used in every case both that given by Husemann and Fröde, not considering the presence of morphine proven unless these reactions both took place. The iodic acid reaction, according to which, by the addition of chloroform, a pink color, and by that of a strong solution of zinc, a blue one occurs, he does not, after many attempts, consider entirely significant,-i.e., characteristic of morphine,—and hence has seldom used it. investigations show:

- 1. That morphine is excreted in not inconsiderable quantities in the saliva.
  - 2. Morphine can accumulate in the body.
- 3. The positive issue of the reaction and the quantitative determination of the morphine present in the contents of the stomach do not allow any direct conclusion as to the amount of morphine abstracted by the action of the stomach, because some of it may have been swallowed in the saliva.
- 4. When morphine intoxication is suspected, the physician or chemist can examine the saliva, so much more easily obtained than the contents of the stomach.

## CREOSOTE TREATMENT OF PULMONARY TUBERCULOSIS.

DR. ALBERT ALBU (Berliner Klin. Wochenschrift, December 19, 1892) writes of the use of creosote for pulmonary consumption in the Moabite Hospital, Berlin, during more than five years. A table shows the amount used during each year. Since November, 1891, the larger doses, so much commended by Sommerbrodt, have been used.

' The dosage has been increased until a half-drachm and more a day has been given. The creosote is administered in pill form, each pill containing five-sixths of a grain of creosote.

As many as fifty, and even sixty, of these pills were sometimes given daily, and continued during weeks and months. Some patients took five thousand of these pills in a few months, and a few nine thousand, equal to four hundred and fifty grammes of pure creosote.

In general there was no difficulty found in the use of such great quantities of creosote. Most patients stood the large doses well, only a small number objecting to the pill or the creosote. The authors tried this remedy in all stages of phthisis, but especially in the initial stages.

Sommerbrodt has gradually come to the conclusion that the good results which he has obtained from creosote are due to its specific action upon the process of the disease. In a publication in 1880 he says that he no longer considers creosote as a symptomatic remedy, but inclines to the thought that it renders the nutritive medium less favorable or entirely hostile to the development of the tubercular bacilli. 1801 he claimed that the increased dose would permanently cure not only the early stages of the disease, but its severe forms. In these extreme views Sommerbrodt is almost alone, and he has not given any scientific grounds for them, but supports them on his practical experiences.

On the other hand, experiments to explain the apparent favorable action of creosote upon tuberculosis of the lungs have not been lacking. Guttmann showed that an artificial nutritive medium, containing one-four-thousandth of creosote, deterred the growth of the tubercular bacilli, and a more concentrated form entirely prevented it; but he also showed that it would be impossible to give enough creosote to obtain this result in the organism. Others made experiments with the same results.

In spite of these facts, creosote has come into general use, and the results appear in a degree favorable. The manifold variety of type in the course of this disease makes it specially difficult to reach any proof. phthisis the action of a remedy upon the fever is the only test, but here the creosote fails us. The creosote is without influence upon the tubercular bacilli. Among the numerous cases treated, Dr. Albu has seen none in which the number of bacilli was permanently diminished during the treatment. The idea suggests itself that possibly the virulence of the bacilli is diminished by the creosote, but experiments in the laboratory prove the contrary. So Albu does not see any influence upon the specific process of the disease indicated by either the clinical or the etiological symptoms of phthisis following the use of creosote. Even under the large doses of creosote, while many patients improve, others become worse; in some cases cavities form and amyloid degenerations occur. His observations and experiments have led Dr. Albu to believe that the action of creosote upon

phthisis can only be symptomatic. The same improvement caused by creosote is also seen in patients who have had no medicine but expectorants and narcotics, but with these all the advantages of hygiene and diet which are possible in a hospital. A large number of such comparative observations were made, and those not treated with creosote often showed more rapid and favorable results. This was not ascribed to the detriment of creosote, but to the varied individual peculiarities and fluctuations so characteristic of the phthisis. Age and heredity, social conditions, former mode of life, present strength, natural power of resistance, exert such a great influence upon phthisis. One patient was in the hospital three different times. The first time he was treated with tuberculin, the second the expectant treatment was followed, and the third time creosote in large doses. Each time he gained from ten to twelve pounds in six to eight weeks, which he had lost while away. This shows that to the one factor common to all—the hygienic-dietetic conditions of the stay in the hospital-must be ascribed the improvement.

While Albu holds that creosote from a purely clinical point of view has no effect upon the tubercular process in the lungs, he considers it a useful remedy in the symptomatic treatment of phthisis, perhaps the best we now have. For most patients it seems to be a good expectorant, for others a stomachic; often it acts as a tonic. But it does not cure phthisis, least of all, not perfectly or permanently.

#### THE DIURETIC ACTION OF THEO-BROMINE.

DR. W. COHNSTEIN (Berliner Klin. Wochenschrift, January 23, 1893), after stating that secretory nerves for the kidneys have not yet been demonstrated, divides diuretics, according to their mode of action, into the following groups: 1, those which increase arterial blood-pressure; 2, those which increase the quantity of blood passing through the kidney; 3, those which act as direct irritants of the secreting epithelium of the kidney.

As to theobromine, commonly known as diuretin, the evidence as to its mode of action is somewhat conflicting. Cohnstein, as the result of his experiments, says that no rise of blood-pressure was observed, and that there was no constant influence upon the frequency of the pulse. No influence upon the energy of the heart's contraction was ever observed. In very large doses there was finally a gradual fall of pressure, and occasionally also of pulse frequency. He concludes, therefore, that theobromine belongs to the group of drugs which act by direct irritation of the secreting elements of the kidney.

#### THE TREATMENT OF HÆMOPTYSIS.

In an excellent article upon the above subject, Comby (*La Médecine Moderne*, Nos. 45 and 46, November 10 and 17, 1892) recommends the following:

For the principal revulsant blistering is of good service. This latter may be employed over the chest or, better still, over the back on both sides. As to medicines, he advises the employment of those agents that act upon the heart and vessels, and whose action is to modify their contraction. Digitalis, by regulating and slowing the cardiac movements, may modify or indirectly arrest hæmoptysis; quinine, which contracts the small vessels, may be associated with digitalis, and especially in those cases that occur in malarial districts. Even ergot may be combined with the above remedies, as in the following prescription:

R. Powder of ergot, Powder of digitalis, Sulphate of quinine, of each, 10 centigrammes; Glycerin, sufficient quantity. Mix and make one pill.

One of these pills is given four or five times a day. The fresh powder of ergot may be given in doses of from 1 to 2 grammes in quassia or in a sweetened mixture. Ergotine and ergotinine may also be employed. Bonjean's or Ivan's ergotine may be administered subcutaneously. Ergotinine may be used in the strength of one milligramme to the cubic centimetre. Besides the above remedies, the author speaks well of tannin, also acetate of lead, the extract of rhatany (in quantities of from 2 to 3 grammes), and perchloride of iron in the form of vapor. Acids may also be said to be effective as adjuvants. The same may be said of balsamic remedies, such as turpentine, terpine, and terpineol. Terpine may be administered in cachets, each of these containing twenty centigrammes; four or five cachets are given in the course of a day. Ipecac is specially recommended in small as well as in large amounts, so as to produce either only nausea or violent vomiting. To allay pain, opium or morphine is to be relied upon. Mineral-waters useful in phthisis are condemned in the treatment of hæmoptysis. The internal administration of iron, iodine, and the iodides, which tend to

cause congestion of the viscera, is also contraindicated in the disorder under consideration.

As to climate, taking into consideration individual idiosyncrasies, high altitudes, according to the author, are the best. In regard to prophylaxis, hygiene should be rigidly enforced; all physical and intellectual overwork and overfeeding should be avoided. Moderate exercise in the open air, careful and nutritious diet, the suppression of tobacco and artificial excitants, warm clothing, and the avoiding of taking cold are all measures which will enhance the production of most favorable results in the treatment of hæmoptysis.

#### COLD-WATER BATHS IN THE TREAT-MENT OF HEPATIC COLIC.

HUMBERT MILLIÈRE (Lyon Médical, November 27, 1892) reports two interesting cases of hepatic colic in which the most remarkable results were obtained by the application of coldwater baths.

The baths were generally given every three hours, the temperature of the water varying from 22° to 28° C. The duration of each bath lasted from ten to fifteen minutes; rectal injections of cold water were also employed. On one of the cases strychnine and antipyrin have been tried without success. In the second case the only remedy used was caffeine (in doses of 30 centigrammes), in order to regulate the action of the heart.

Under the influence of the Brand system a cure was produced in both patients. Commenting upon the happy results obtained, the author believes that the method warrants a further trial. The injections of cold water are also recommended, because putrid matters are thus removed from the intestine and reabsorption prevented. Cold water produces a lowering of the temperature and the blood in the venous system, and thus tends to diminish congestion of the liver, a most desirable effect.

Finally, the mechanical action causes peristaltic movements, thus facilitating the passage of the calculi. A diuretic action is also produced, which, in turn, enhances the elimination of poisonous materials.

#### THE CURABILITY OF HEPATIC CIR-RHOSIS.

Four cases of hepatic cirrhosis of an alcoholic nature and one case of malarial origin are reported in detail by CLEMENTE FERRERA (Bull. Gén. de Thér., October 18, 1892). In

all of them the most happy results were obtained under the influence of milk diet and the administration of iodides and mercurials. It has been shown by Murchison, in his most excellent treatise on hepatic affections, that mercurial preparations, especially blue mass, have rendered the best service in the treatment of this disorder. This fact induced Ferrera to apply a similar medication with the most striking results.

According to the latter author, diuretics, by increasing the function of the kidneys and aiding in the elimination of waste products, as well as in the reabsorption of dropsical effusions, contribute also in a marked degree to the success of the treatment. In an article upon the same subject, DUJARDIN-BEAUMETZ (Bull. Gén. de Thér., November 15, 1892) recommends the hippurate of calcium in order to combat hepatic congestion, using the following prescription:

R Hippuric acid, 25 grammes;
 Lime-water, sufficient quantity to neutralize;
 Simple syrup, 500 grammes;
 Syrup of lemon, sufficient quantity.
 Mix four to six dessertspoonfuls a day.

The author does not believe in the administration of calomel, as advised by Germain Sée and Bouchard, because the drug, in cases of cirrhosis of the liver, is so apt to produce ptyalism, this phenomenon having a tendency to increase the cachectic condition of the economy. He calls attention to the use of copaiba, so much in vogue in England, and recently introduced in Russia in the clinic of Lebsch. The remedy has been advantageously employed in doses of 4 grammes per day. Besides diuretics, Dujardin-Beaumetz advises the careful use of purgatives. He condemns the application of hydrotherapy and electricity. as these measures have never given good results in his hands.

The author finally recommends the administration of the iodide of potassium conjoined with a milk diet, in order to enhance diuresis and at the same time the elimination of the iodine by the kidneys. The salt may be given in doses of from 2 to 4 grammes a day.

#### THE PRESCRIBING OF PEPSIN.

In the *Brooklyn Medical Journal* for December, 1892, Dr. R. G. Eccles contributes an article upon how physicians prescribe pepsin, in which, after pointing out that pepsin is the most sensitive remedy the physician prescribes, and that its range of incompatibles covers

nearly the whole range of materia medica, he goes on to say that there are but few substances that do not in some degree arrest its proteolytic power, and yet it is prescribed frequently in utter disregard of its most glaring antagonisms, and almost constantly without thought of its minor inhibitors. Unless one has paid close attention to the subject, the best rule to follow is to prescribe it alone or with some substance known not to seriously affect it. Sugar of milk, glycerin, dilute acids, or alcoholic solutions known not to contain over twenty per cent. of alcohol are the best. Even this small amount of alcohol is slightly deleterious. As a fair illustration of how pepsin is treated by some Brooklyn physicians, the following prescriptions have been taken from the files of a drugstore in this city. They represent all those that called for pepsin during the period covered, except such as were repeatedly ordered by the same physician under merely slight modifications. The most flagrant violation of all rules regarding the administration of this substance was found in the following from a gentleman in good standing among the profession:

> R Pepsinæ sacch., zi; Sodæ bicarb., zss. M. Ft. chart. No. xv. Sig.—One every three hours.

Whatever the interest of the prescriber may have been, it is safe to say that that patient derived absolutely no benefit from the drachm of pepsin. He might as well have thrown the money it cost into the ocean. If the prescription did any good, it was due to the bicarbonate of sodium alone. A single grain of the soda was enough to destroy far more than the amount of pepsin prescribed as effectually as if it had been consumed in a furnace. Again, if there had been no sodium bicarbonate present, the quantity of pepsin given at a dose was so small that it could at best serve but little better than a placebo. The Pharmacopæia of 1880, following that of an earlier date, called for a saccharated pepsin that would digest fifty times its own weight of albumin in six hours, but it did not order the albumin to be comminuted. With finely-ground albumin the same pepsin will, in the same time, digest nearly ten times the amount it could if the albumin was submitted to it in large pieces. The earlier saccharated pepsins being expected to digest fifty times their own weight of lump albumin, were therefore nearly ten times stronger than our modern ones. Manufacturers, taking advantage of our new method of using finely-ground

albumin, claim to supply a U.S. Pharmacopœia saccharated pepsin, when, in fact, it is nothing of the kind. All it really digests, when truly gauged by the Pharmacopϒa, is five times its own weight of non-comminuted albumin. Many will not even do this. the quantity of liquid in the stomach bears no such large proportion to the meal as the quantity used in pepsin-testing does to the albumin, another source of deception creeps in. The whole drachm of pepsin of this prescription, had it been given at one dose, could not have digested a single ounce of meat or half of a small egg. But it was given in fifteen doses, three hours apart. Had each powder been left of full strength, it would not have digested a bulk of albuminous food much larger than a cherry, and it would have taken six hours to do that. But the stomach that does not digest a meal in less than six hours is not in prime condition. The next worst prescription came unsigned, as if the prescriber was himself ashamed of it.

R Subcarb. bismuth, zi;
American pepsin, zii;
Bicarb. soda, zi;
Spearmint water, q.s.. zii. M.
Sig.—One every two hours.

Here, again, we have the utter destruction of the pepsin by the bicarbonate of sodium. Surely it ought not to take this prescriber long to reach the point where he would turn around and denounce pepsin as useless. If he often serves it this way he can never hope to have good results from its use. Perhaps, however, he credits the pepsin with such good work as happens to be done by the soda or bismuth, and hence does not become its enemy. The quantity here ordered is better than the last, and is especially so because he specifies a brand that has in the past ranked above the average. But even here, had the ferment been left in full vigor, the quantity was too small to be of any great benefit. The next is scarcely as bad as the two preceding, but does not require a great deal of scanning to see wherein it falls seriously short of an ideal prescription:

Ammon. carb., gr. ii;
 Tr. opii camph., mxl;
 Liq. pepsin, 3i;
 Aq. calcis, q.s. ad 3iii. M.
 Sig.—One every two or three hours.

Here we have ammonia carbonate and limewater enough to more than overcome the acid of the liquid pepsin. All alkaline substances destroy pepsin, and therefore the care he took to specify whose pepsin he wanted was in vain. Lime-water and pepsin should never go together, and the same is true of carbonate of ammonium and pepsin. Why he thus strove to get his compound alkaline is a mystery, if he knew anything about the article he was prescribing. In the next prescription we find a blunder of the same kind made by a different gentleman. Here, however, less lime-water was called for and no ammonia carbonate.

R. Aquæ cinnam., 3iss;
Aquæ calcis, 3ss;
Bis. subnit., 3ss;
Pulv. acaciæ, 3i;
Pepsini, gr. xv;
Spr. vin. gallici, 3iii;
Syr. pruni. virg., q.s. ad 3iii. M.
Sig.—One every three hours.

Evidently these gentlemen were thinking more of the symptoms they wished to combat than about the chemical relations of the mixtures they were ordering.

The next combination is rather an uncommon one. It was evidently intended, like the bicarbonate of sodium prescriptions already given, to overcome acidity of the stomach as well as lack of digestive power. If two sets of powders had been ordered, the one containing the pepsin, the other the magnesium, and these given in rotation a few hours apart, they would have worked admirably:

R Pepsini,
Magnes. albi., of each, 3i. M.
Ft. pulv. No. xii.
Sig.—One powder in water three times a day.

Here the quantity of pepsin in a single dose is 5 grains, but the quality may be very good or very poor. The druggist can take his choice from any one of the dozens of kinds upon the market. The five grains may be able to digest over twenty thousand grains of comminuted albumin, or they may not be able to digest more than five hundred grains. If the druggist puts in the best, it will be forty or fifty times stronger than the poorest. Unless he has tested the different brands himself he has no means of knowing which is the best or which the poorest. Price is no criterion, for one of the poorest is a high-priced article, and one of the very best sells wholesale at a reasonable rate. Nor can the claims of the manufacturers always be relied upon. Usually it is wise to take their florid statements cum grano salis.

The next two prescriptions are from the same physician. Usually he is very careful about what he orders with this ferment, but in these cases he touches the verge of danger:

Re Sodii benzoat., gr. xl;
Potass. bromidi, ziss;
Spts. ammon. arom., ziss;
Syr. scillæ, zvi;
Fluid pepsin, zvi;
Aquæ, q.s. ad zii. M.
Sig.—One drachm every three hours.

R Acid. phosph., 3i;
Pepsin, gr. xl;
Spts. chloroformi, 3iii;
Aquæ camph., 3iii;
Aquæ, q.s. ad 3iii. M.
Sig.—One after meals, in water.

If the druggist, in compounding the first of these, should inadvertently add the fluid pepsin before putting in the syrup of squills, there would be an instantaneous destruction of the ferment. If the syrup of squills happened to be deficient in acetic acid, or the aromatic ammonia had an excess of alkali or alkaline carbonate, the same thing would occur. Dispensed of proper strength and in the order given, no harm could befall the pepsin from the alkali, but the mixture will contain three salts showing considerable inhibitory power in the proportions ordered. In the second prescription we have the pepsin fortified by the acid phosphate, but seriously crippled by chloroform, that happens to be a very strong inhibitor of proteolytic power.

The next two are by different gentlemen, who have made the same mistake:

R. Bis. subcarb., 3ss;
Hydrarg. chlor. mit., gr. ii;
Vini pepsini, 3ss;
Tr. opii camph., 3ss;
Tr. aconitæ rad., gtt. x;
Mist. cretæ, ad 3ii. M.
Sig.—Small teaspoonful every three hours.

R. Hydrarg. cum cretæ, gr. ii;
Pulv. doveri, gr. i;
Bis. subnit., 3i;
Pepsini, 3ss. M.
Ft. chart. No. xii.

Again we see an attempt to correct the acidity of the stomach and at the same time administer pepsin. The result is always disastrous to the last-named substance. The chalk probably does not kill the pepsin's power as an alkali would, but it keeps away the acid, without which no pepsin is active. The mercury salts are likewise powerful inhibitors, and should never be administered with ferments. The error of the following is a very common one among physicians, and the prescription shows how deepseated a simple physiological misconception can become:

Cerii oxalatis, Diss;
 Pulv. pepsini et pancreatin,
 Bis. subnitr., of each, Ji. M.
 Ft. chart. No. xv.
 Sig.—One after each meal.

Pepsin digests and thereby destroys pancreatin, and pancreatin digests and destroys pepsin. Pepsin requires an acid medium to digest in, while pancreatin develops its power in an alkaline one. If the pepsin benefits the patient, the pancreatin certainly cannot. If the pancreatin does the work, the pepsin is wasted.

The next two prescriptions represent the least objectionable forms when active drugs must be given with this ferment. The substances, while possessing some slight degree of inhibitory power, have much less than the general run of articles contained in a drug-store. The physicians prescribing them are both Americans.

Quin. sulph., gr. viii;
Bis. subnit., ji;
Pulv. pepsini, ji. M.
Ft. pulv. No. viii.
Sig.—One every four hours.

Pepsini puri, gr. xxx;
Bis. subnitratis, gr. xx;
Pulv. opii, gr. ss.

Misce bene et fiant chart. No. x.
Sig.—One every three hours.

There is but one objection to urge against these. The quantity of pepsin is too small. It is not in any sense toxic unless laden with foul bacteria. No pepsin should be dispensed that is not aseptic. A pepsin that is highly insoluble in water and very dilute acid is very likely to be highly infected, because of the way it is procured. A soluble pepsin that gives out a foul odor after twenty-four hours in a solution in a warm room should never be used. The dose of pepsin is indefinite. A whole drachm of the most active on the market can be swallowed without injury by an adult. If prompt action is wanted, doses of 10 grains or more of a first-class article should be given. The right kind of cases respond promptly to such treatment. With patients complaining of sour stomach, pepsin should not be given until that symptom has disappeared either spontaneously or by proper treatment. Where diphtheritic membranes are sought to be removed, the purest and most powerful brands can alone be relied upon for quick results. Where gangrenous wounds are to be cleaned off, the same advice applies. A pepsin capable of digesting twenty-five thousand times its own weight of albumin in pharmacopæial time has lately

been tested by the writer. Such an article, could it be made at a low rate, would be a powerful aid to surgeons and to physicians who have diphtheria to contend with. Hand in hand with antiseptics, they could easily vanquish septic and diphtheritic germs by its aid.

#### A COMPARATIVE STUDY OF THE PHYSI-OLOGICAL ACTIONS OF BRUCINE AND STRYCHNINE.

In an interesting paper with the above title, published in the *Medical News* for April 8, 1893, Dr. EDWARD T. REICHERT reaches the following conclusions:

A careful comparison of the results of the detailed studies made with these alkaloids shows so few and unimportant differences that the conclusions arrived at from the study of strychnine are applicable to brucine, with slight additions and modifications. In the following summary where differences exist they are distinctly stated; otherwise it may be considered that the actions and effects are identical.

- 1. The minimum lethal dose of brucine for the dog, when intravenously injected, is about .008 gramme to the kilo of body-weight, and of strychnine about .002 gramme, the relation being 1 to 40. In the frog, the minimum lethal dose of brucine is about .1 gramme, and of strychnine about .002 gramme to the kilo of body-weight, when subcutaneously injected.
- 2. Doses of from .015 to .020 gramme to the kilo, intravenously injected, cause a condition of absolute muscular quiet, and by means of artificial respiration the animal may be kept alive in excellent general condition.
- 3. Quantities in excess of .r gramme to the kilo may be intravenously injected in divided doses without causing death, provided that artificial respiration be employed.
- 4. The toxic actions of brucine and strychnine are so directed to the motor centre in the spinal cord that the minimum fatal dose is exceedingly small, owing to the production of asphyxia or to exhaustion by the violence and persistence of the tetanic seizures. Should artificial respiration be maintained, about five hundred times the minimum lethal dose may be injected without an immediately fatal result.
- 5. By a proper regulation of the size of the dose and the method of administration, the stage of excitement may be prolonged over an almost indefinite period, or may be so brief as to last for but a few seconds.
- 6. During the stage of excitement the following actions and effects are observed:

- a. The motor disturbances and convulsions are of spinal origin.
- b. The sensory nerves and muscles are unaffected.
- c. The motor nerves, after the onset and continuance of convulsions, become depressed from overwork.
- d. The pulse-rate is lessened in frequency, then increased, and finally diminished. The first effect is due to a stimulation of the cardio-inhibitory apparatus, the second to its depression, and the last to a depression of the excitomotor ganglion, or automatic motor ganglion in the heart.
- e. The arterial pressure is primarily diminished, then greatly increased, and at last diminished. The first effect is due to some obscure action on the vaso-motor centres in the medulla oblongata, the rise of pressure to a stimulation of the vaso-constrictor centres in the same part, and the final fall to a depression of the heart and vaso-motor centres. In curarized animals the rise of pressure due to stimulation of the vaso-motor centres is relatively and absolutely greater than in the non-curarized animal.
- f. The respiration-rate is not specifically affected, unless it be in the nature of a decrease, or during the period of convulsions, when it may be decidedly increased.
  - g. The bodily temperature is increased.
- 7. During the stage of paralysis the following are noted:
- a. The muscles are not in the least affected, unless after enormously excessive doses.
- b. The sensory nerves are inexcitable to strong electric currents.
- c. When the motor nerves are subjected to a powerful faradic current, spasm of the muscles supplied no longer occurs, although the nerves transmit impulses from the nerve-centres; irritability is lost, but conductivity remains.
- d. The pulse-rate is reduced, but the height of the curves is increased, the first effect being due to a depression of the motor ganglia in the heart, and the second effect to the greater filling of the viscus with blood, and perhaps to a direct stimulation of the heart. The cardio-inhibitory fibres are paralyzed, but no increase in the frequency of the pulse-rate is observed, owing to the predominance of the depressant action on the heart ganglia. Stimulation of the vagi causes smaller pulse-curves and a slight increase in the frequency of the beats.
- c. The arterial pressure is increased, unless the dose has been greatly in excess, when it is diminished. The increase is due to a stimulation of the vaso-motor centres in the medulla

oblongata, and the decrease to a depression of the heart and to vaso-motor paralysis. The increase of pressure is greater and more persistent in curarized animals. In non-curarized animals the pressure sinks below the normal immediately after the tetanic paroxysms, but in those curarized this depression is less marked. Asphyxia and electric stimulation of a sensory nerve fail to cause a rise of pressure, as in the normal animal; on the other hand, asphyxia is always accompanied by a fall.

- f. The hæmoglobin is in some way affected so that it cannot be oxygenated to the normal degree, although the spectroscope reveals nothing but oxyhæmoglobin.
- g. The temperature may be increased or decreased by brucine, but is always increased by strychnine. Cocaine is unable to cause its characteristic increase of heat-production and temperature, as in the normal animal. Apparently, both strychnine and brucine paralyze the accelerator thermogenetic centres, and leave intact the automatic thermogenetic centres.
- h. The paralytic condition caused by strychnine and brucine closely resembles that produced by curare, but is in many ways entirely distinct.
- 8. The chief differences in the physiologic properties of brucine and strychnine are as follows:
  - a. Brucine is less rapidly absorbed than strychnine, and, as a consequence, is less prompt in its actions.
  - b. Brucine is from forty to fifty times less powerful as a convulsant, and therefore proportionately less fatal.
  - c. Brucine acts relatively more powerfully on the volitional centres in the frog than as a motor excitant, with the effect oftentimes of causing in these animals a loss of volitional movements preceding the stage of convulsions. In mammals, however, it does not seem that either poison ever destroys volition before the appearance of convulsions.
  - d. In excessive doses brucine is more poisonous to the sensory nerves than is strychnine.
  - c. During the last stage of the poisoning the action of brucine on bodily temperature is uncertain, while that of strychnine is positive. Brucine is, ultimately, a stronger depressant to the heart, and after enormous doses more toxic to the muscles.
  - 9. The green frog (Rana esculenta) is somewhat more susceptible to brucine than the spotted frog (Rana temporia). The same difference is noted with strychnine.

The results of this research render it obvious that the physiological actions of brucine and strychnine are essentially identical, the differences being practically solely in degree and not in kind. This, together with the fact that the convulsant action of brucine is in the mammal about forty times less than that of strychnine, indicates that brucine will prove not only a safer drug, but of infinitely greater value as a general therapeutic agent.

#### HYPODERMIC MEDICATION.

In an extended article on the art of prescribing medicines, DUJARDIN-BEAUMETZ (Bulletin Général de Thérapeutique, February 15, 1893) recommends the following formulæ for hypodermic injections:

#### I. MORPHINE.

R Chlorhydrate of morphine, .10 gramme; Boiling water, 10 grammes. M.

A half-syringeful represents five milligrammes of the drug.

To lessen the dangers of morphinism, atropine may be associated with advantage, as in the following combination:

#### 2. MORPHINE AND ATROPINE.

R. Chlorhydrate of morphine, .10 gramme; Neutral sulphate of atropine, .010 gramme; Boiling water, 20 grammes. M.

Each cubic centimetre of this solution contains half a centigramme of morphine and half a milligramme of atropine. The dose is recubic centimetre of the solution hypodermically injected. The association of cocaine is condemned as a dangerous procedure.

The author advises the administration to persons in the recumbent posture only, since the vertical posture is apt to determine untoward symptoms, such as vertigo and syncope. He recommends this formula:

#### 3. COCAINE.

R. Chlorhydrate of cocaine, .20 gramme; Boiling water, 10 grammes. M.

A syringeful may be administered in divided doses, never exceeding an injection of ten centigrammes of the solution.

The best method for the administration of quinine is as follows:

#### 4. QUININE.

R. Basic chlorhydrate of quinine, 1 gramme; Alcohol at 60° F., 3 grammes; Distilled water, 6 grammes. Caffeine and theobromine, according to the author, are best administered in combination with the benzoate of sodium, as in the following prescriptions:

#### 5. CAFFEINE.

Caffeine,
 Benzoate of sodium, of each, 2.50 grammes;
 Boiling water, 10 grammes. M.

#### 6. THEOBROMINE.

R Theobromine,
Benzoate of sodium, of each, 2.50 grammes;
Boiling water, 10 grammes. M.

In the case of antipyrin, to avoid local irritation, the author advises a solution of the drug in boiling water, in the proportion of 1 to 2 parts.

#### THE TREATMENT OF ACUTE ALCO-HOLISM.

In the treatment of this condition, E. LAN-CEREAUX (Bull. Génér. de Thérapeutique, February 15, 1893) insists on a course of inducing sleep by all possible means. The patient should be isolated and placed in a dark room, under a careful watching; but no attempt should be made to enforce the use of the straight-jacket, as such a procedure is apt to increase the mental excitement and to hasten death in many instances. Regarding the use of medicaments, those should be employed whose action is on the nervous elements, with a tendency to diminish reflex irritability. Such are the bromides, opium, morphine, hydrate of chloral, and others. According to the author, the bromides act too slowly in acute cases; opium and morphine are decidedly useful to induce sleep, but as large quantities are required in most cases, the hydrate of chloral is to be preferred. This remedy, with or without morphine, has always given the best results in patients who have been previously isolated and in whom the use of the night-shirt has been dispensed with. The use of the chloral is indicated, but in order to bring on sleep large doses must be employed, since small quantities of the drug, on the contrary, excite alcoholic patients and are apt to enhance a fatal issue. 4 or 6 grammes of the medicament should be given at once in 150 grammes of an electuary containing 50 grammes of the syrup of morphine. If, in ten minutes after the ingestion of the potion here recommended, sleep has not been induced, a hypodermic injection of 1 or 2 centigrammes of morphine should be practised. If necessary, a second dose of the chloral mixture should be given. With this treatment, the patient, according to the author, will be ready to attend to his usual occupation in from twenty-four to forty-eight hours. It is not the multiplicity of medicaments, but the choice of the one indicated, which will lead to a successful treatment of acute alcoholism.

## THE PHYSIOLOGICAL ACTION OF BROMIDE OF ETHYL.

The action of bromide of ethyl has been studied under Parloff, of St. Petersburg, by L. GUINZBOURG (Vratch, No. 31, 1892; Bull. Gener. de Thérapeutique, February 15, 1893). The experiments were made on dogs and rab-The investigator divided his experiments into three series. In the first series, the animals were allowed to breathe freely in an atmosphere charged with the bromide of ethyl; in the second series, a mixture of air and bromide of ethyl was insufflated into the lungs of the animals; and in the third series, the drug was administered intravenously in the form of emulsion. The general results obtained were as follows: The inhalation of small quantities of ethyl bromide produced narcotic effects, without any changes in the arterial pressure, although the pulse was accelerated but regular. Larger amounts caused from the start a diminution of the blood-pressure, accompanied with an irregularity of the cardiac beats; but such a diminution was of short duration. Still larger quantities of the drug produced a lowering of the arterial pressure, followed by an elevation of short duration; the diminution was again accompanied with disturbances of the pulse. With the elevation of pressure, however, the cardiac pulsations became regular. Very large amounts of the vapor of bromide of ethyl caused from the beginning a fall of the pressure, followed by an insignificant rise. In these instances the irregularity of the heart's action was quite marked. The drug, in small doses, produces an increase of the pulse-rate by an action on the cardio-motor ganglia or on the accelerator nerves; the slowness of the pulse, after large doses, being attributed to a diminished irritability of the cardiac muscle. diminution of the arterial pressure depends on a paralysis of the peripheral vaso-motor constrictor system. Bromide of ethyl does not influence the vagi nor the central vaso-motor dilator system; neither is there much action exercised on the peripheral vaso-motor dilator nerves. The results of these experiments have led the author to conclude that narcotic effects can be obtained from bromide of ethyl without causing changes in the blood-pressure; that

toxic doses of the drug produce arrest of the respiration before that of the heart, and that disturbances of cardiac action are also induced; that, therefore, in administering the bromide of ethyl the same precautions should be taken as in administering chloroform. The anæsthesia by bromide of ethyl is rapidly produced, but it likewise passes off quickly. This phenomenon shows that the use of bromide of ethyl cannot well replace that of chloroform.

## THE CHLORHYDRO-SULPHATE OF QUININE.

According to the studies of E. GRIMAUX and LABORDE (La Tribune Médicale, February 16, 1803), this new double salt of quinine contains 74.2 per cent. of the alkaloid, and is represented by this formula: (C, H, N,O) 2HCL, SO, H, 3H, O. The salt is soluble in its own weight of water at ordinary temperature. On account of its solubility and its large percentage of quinine, it is preferable to the sulphate and even to the chlorhydrate. From a series of experiments upon the lower animals, the new salt has been found to produce the same physiological and toxic effects as those caused by quinine,—that is, the characteristic bilateral shaking of the head in the guinea-pig; inco-ordination; motor ataxia; local, followed by general, anæsthesia; and later, cinchonism and phenomena of asphyxia. These effects were caused in doses of from .10 to .20 gramme hypodermically injected to a guineapig weighing four hundred grammes. symptoms are rapidly produced. Clinically, the chlorhydro-sulphate of quinine has given excellent results as a substitute for the sulphate or the chlorhydrate. The authors give the details of four cases in which the new salt gave the most satisfactory results. They found, besides, that the hypodermic injections of the medicament under consideration are not painful, as is the case with the sulphate and even with the chlorhydrate. The authors add a note referring to the favorable results obtained with the new remedy by Laveran, who employed it in one of his cases. This latter authority sustains the advantages claimed for the remedy by Grimaux and Laborde,—that is, non-painful when administered subcutaneously, and its rapidity of absorption.

#### THE ACTION OF MORPHINE AND ATRO-PINE UPON THE CIRCULATION.

E. VOLLMER (Centralblatt für Klin. Medicin, No. 51, 1892) continues the studies begun by

Binz, and carried forward by the latter's pupil; Henbach. Vollmer performed eleven experiments upon dogs, and he gives the details of each. The method pursued was to inject morphine subcutaneously, and then by a gasometer measure the respiratory volume of the dog when under the influence of the morphine. Atropine was injected in general from one to three hours later, and its effect upon respiration measured in the same way.

Vollmer concludes that atropine has the power, in dogs under the influence of morphine, to increase the volume of respiration quickly and decidedly. This increase occurs most quickly if the atropine goes directly to the brain and does not reach it indirectly by way of the heart and lungs.

Henbach's conclusion that the antagonism between morphine and atropine affects the entire organism, but especially the respiratory function, is justified. It is unknown whether the increase of respiratory volume under atropine depends immediately upon irritation of the respiratory centre or upon a lowering of a normal inhibitory innervation.

Vollmer criticises Orlowski's experiments by declaring that the doses of atropine he used were so disproportionately large, as compared with the morphine given, that the animals were overwhelmed by them. He, of course, maintains that Unverricht has no right to hold that atropine paralyzes respiration and is no antidote for morphine.

#### THE PRESENT POSITION OF BLOOD-SERUM THERAPY.

DR. ARTHUR KLEIN, in the *Therapeutische Blätter*, No. 1, 1893, says that recent advances in the study of the blood-serum may affect the whole future of medicine. These show the blood in the light of a protecting organ for the rest of the organism. Much investigation remains to be made, especially as to the conditions of immunity from infectious diseases. Behring's blood-serum therapy is the most recent of these important discoveries, and has already found its way to the bedside.

By immunity we understand the power of an organ to defend itself successfully against the entrance of an infection. This immunity may be congenital or acquired. The congenital is peculiar to the animal genus, the acquired is the special acquisition of an individual; in both forms the immunity is specific,—i.e., for certain infectious diseases, but by no means for all. The rabbit appears to be non-inoculable

by the bacillus *Friedländer*, the dog by diplococcus pneumoniæ, the rat by anthrax. If we see a horse survive a deadly dose of a tetanus culture, we know that he must have acquired this immunity artificially.

The methods of producing artificial immunity are numerous, but, in general, they seek to follow the natural way as much as possible. There are two diverse views as to the manner in which the organism protects itself against disease. One view is, that there are cellular portions of the blood—the white blood-corpuscles-which render the organism immune, by forming a wall against the causes of infection, taking them up and destroying them (as scavenger cells). One must imagine that the mobilizing of the white blood-corpuscles at the point of the outbreak of infection (local inflammation) is due to a chemical irritation. which proceeds from the infectious germs, attracting the white blood-corpuscles. Opposed to this theory are equally acute observations. which see that the means of protection of the organism consists in substances dissolved in the blood. The excitants of infection known to us may be divided into two categories.

One kind is excessively increased in the body, growing through the tissues, pressing into the circulation, and threatening the organism by the very great hordes of parasites which are able to disturb or entirely stop the normal functions of the organs. These infections may be grouped under the general idea of septicæmia (as anthrax, diplococcus infection).

Another portion of infectious germs increase but little in the infected animals, or at least remain confined to the infected place; the pathogenic micro-organisms which belong to these (as tetanus, diphtheria, cholera) do not enter the circulation, but they produce an intensely active poison, which is absorbed by the organism attacked, and thereby develops an activity injurious to the organism. This must be distinguished as an entirely different mode of infection from the former, and is designated as intoxication.

If it is possible to render animals immune against the toxines, there must exist anti-toxines.

If it is possible to produce a protective body of such power that it is able suddenly to render immune an organism where infection already exists, then the protective has become the healing substance, and the method of rendering immune a healing method. For the congenital immunity, no general explanation of its origin is yet possessed. For that artifi-

cially produced, we are able to trace it confidently to a property of the cell-free blood. But in no disease against which a sufficiently high degree of immunity has been produced in an animal of originally light receptive power has any one been able to prove the absence of the bodies conferring immunity in the extravascular blood of the individuals rendered immune.

First, a high degree of immunity is to be produced in a receptive individual, and then trial is to be made to see whether the blood of the animal rendered immune produces a preventive and healing action upon others. Behring has tried to render rabbits immune from a tetanus infection. The culture, bred in meat-broth, is reduced with carbolic acid to five per cent., which is now administered in five increasing doses, given by intraperitoneal injec-The doses follow each other at intervals of from three to five days. If the injection is not well borne by the rabbit, instead of increasing the dose, the last dose given is repeated. The animal acquires a correspondingly increased degree of immunity, as examination of its blood-serum shows. It is also tested by ascertaining what quantity of the serum will render a white mouse of a given weight immune. After receiving the last of the five injections, the injections are of the culture in its full virulence, always increasing from very small to larger doses.

But for large and susceptible animals we must either have a blood-serum of enormous power to render immune, or use it in enormous quantities. This shows that larger animals must be chosen for the treatment, which can endure the loss of larger quantities of blood without injury to their health, and are able to supply the necessary quantities of blood-serum. Sheep are suitable, but above all horses, which Behring regards as the "travelling apothecaries of the future." The method used for rabbits needs only slight medifications to be applied to horses. Behring has already cured large animals with this, and Rotter reports one man successfully treated for tetanus; of course further experiment will develop a more potent cure.

## TREATMENT OF DIPHTHERIA WITH CHLORIDE OF IRON.

DR. E. HÜBNER and DR. N. ROSENTHAL (*Therapeutische Monatshefte*, December, 1892) write in separate articles of the use of chloride of iron for diphtheria, as recommended by Rehn. Dr. Hübner treated fifty-two cases with

it, losing only two, although six other patients had the disease with such severity that he could not have hoped to save them with any of the remedies formerly used. He had the throat painted twice daily, and in very severe cases three times, with a solution of 4 equal parts to 1 part in 5. He also made use of frequent sprinkling of the throat with weakened limewater, of ice pellets, and an ice bandage about the throat.

Dr. Rosenthal tabulates seventy-nine cases of undoubted genuine diphtheria treated by him. The patients came under his treatment early, and remained until the disease was over. Only seven, or less than nine per cent., died, and the good results must be ascribed to the remedy.

#### THE VALUE OF DRUGS.

In the London Practitioner for January, 1893, Dr. SAMUEL WILKS contributes an interesting practical article upon this subject, in which he points out that there are striking forms of disease to which we can give a name, but the majority of cases are too complex in their variety of trivial symptoms to be received into any nomenclature. There is often a general disturbance of the whole machinery without any disease whatever, the cause which upsets the machinery being found in the patient's surroundings. The latter believes that there must be some actual malady in the spot where the uneasiness is felt; but alas! for the doctor who wishes to be scientific in his treatment and discover the organic cause; the bromide which he prescribes does not touch the shrew at home or the exacting master at the office. Such, however, are many of our patients,—the man ailing from anxiety in business, the woman from domestic troubles, the young girl from causes touching the affections,—and they all suffer from headache, dyspepsia, sleeplessness, and the like. They naturally seek the doctor's advice, and they get in return such remedies as ammonia and the bromide of potassium. He says, as regards the latter drug, that a medicine of so universal application cannot be of much worth. He knows of no disease in which it has not been given. Our true remedies, such as digitalis or iodide of potassium, have only a limited special power, but a drug like the bromide, excepting for its influence in epilepsy, must be considered but a poor and feeble remedy. It cannot be said that it has ever cured a disease. Its universal use is enough to characterize its impotence. He has never read the prescriptions of certain obstatric physicians without observing that bromide of potassium is an ingredient. curious, but not a very exhilarating exercise, to look over one's note-books, and observe the prime cause of the trouble for which the bromide was prescribed. If we do, we find something like the following under "cause" of the complaint and "remedy": Worry in business, bromide of potassium; loss on the Stock Exchange, bromide of potassium; quarrel with the cook, bromide of potassium; loss of a pet dog, bromide of potassium; blighted affections, bromide of potassium; girlish love-troubles, bromide of potassium; irritable step-mother and step-daughter, both bromide of potassium; and so on through an infinite number of causes which upset the nervous system. Wilks is afraid he has ruffled the temper of more than one medical man whom he has met in consultation. After describing the symptoms, and he is about to relate the treatment, Wilks forestalls him by saying, "I suppose you gave him a little bromide of potassium." There seems, however, to be no help for it, and we are forced to treat the most prominent symptoms when we cannot remove the cause. In such cases as these, however, it is most difficult to discover the efficacy of medicines. In order to do this we must very much narrow our field of observation, and fall back on a few well-defined diseases in order to decide the true value of drugs. Fortunately, in these clearer instances we can prove their value to demonstration. The correct method would be to report these cases in full, with the accompanying treatment, so that the connection between cause and effect would be more evident. As space will not allow this. no more can be done than, with his note-book before him, give the reader the results of a long experience in a few well-marked instances of known diseases.

He says, in speaking of true and well-established remedies, that our knowledge of them has been mainly empirical, their mode of action being often unknown. He still maintains, however, that our method of using them is scientific, if we can say from long observation that their administration is indicated in particular cases by special circumstances. He calls it an unscientific method, and essentially bad treatment, if when a remedy is originally suggested for a plausible reason, it is still persevered in, although it has been found to be utterly valueless; a routine system goes on, whatever the result may be, and nothing arrests it but the adoption of a new theory. Witness the frequent changes in the treatment of phthisis.

He gives one or two examples of his mean-

ing. A very common cause of a thickening or swelling over a bone is the formation of a syphilitic deposit. This is cured by iodide of potassium; therefore all enlargement of bones is to be treated by this remedy, Wilks has never, however, seen an enlarged or hypertrophied bone reduced by it, nor does he think it possible for osseous tissue to be absorbed by it. Some years ago he took to the Pathological Society some enlarged bones of a man who had long suffered from osteitis deformans. exhibiting them, he said he should now proceed to read the treatment which the patient had undergone at the hands of a great many of the leading physicians and surgeons in London. When Sir William Fergusson, the President, saw the thick bundle of prescriptions, he requested Wilks to refrain from doing so. Wilks replied that they would not take a minute to read, for the whole of them consisted of iodide of potassium.

Another example is that of the treatment of hypertrophy of the spleen, as seen in splenic leucocythæmia. This is so slowly developed, and the symptoms are so slight, that, as a rule, the organ is of very large size before the patient seeks advice; it may even have reached the pelvis and have turned the corner. Nearly thirty years ago, about the time when the disease came to be more generally recognized, he collected a large number of cases. These had all been treated by quinine, mercury, and iodides, together with local applications of the same, the object being, of course, to endeavor to absorb the tumor. These drugs had not the slightest effect, and when one found that the enlargement was a true hypertrophy, there seemed no reason why they should cause the absorption of splenic any more than any other tissues. So far as my experience goes, iodide acts only on the new lowly-organized products, so as to cause their disintegration, and only in large and poisonous doses would it destroy the healthy organized tissues. Ever since he made these observations he has never yet met with a case of splenic disease where the above-named remedies have not been systematically used. and always, of course, with the same negative result. In speaking of the iodide and the limits of its usefulness, he noted that it is still frequently prescribed in tuberculous meningitis, as being the remedy most likely to do good, although he is not aware that it has ever cured a single case.

Exophthalmic Goitre, or Graves's Disease, eured by Belladonna.—As this disease is so chronic in its course, and as belladonna so often produces specific symptoms, it is neces-

sary to leave it off for a time, and in the intervals give some other medicine, such as quinine. It is thus true that, in nearly all his cases, other medicines have been given besides belladonna. They have, however, by themselves been found quite ineffectual in arresting the disease. He therefore considers that they may be put aside This leaves belladonna alone as the as inert. sole agent in bringing about a cure. He has in his note-book several cases, mostly of women in whom the symptoms were well marked, which got absolutely well in the course of some months under the belladonna treatment. He has usually given 1/2 grain of the extract three times a day, with short intervals of rest. He here remarks that it is admitted that the disease may exist notwithstanding the absence of certain symptoms; in one case there may be no exophthalmos and in another no goitre. He goes further, and believes he sees cases where neither exophthalmos nor goitre exist. But lately he saw a middle-aged lady who, without apparent cause, had grown very thin, and had taken tonics and good diet without any effect. There was a very rapid pulse and perspiring skin. He thought of Graves's disease, and prescribed belladonna. When he saw her a month afterwards she was another woman, and on the high road to complete recovery.

Idiopathic anæmia is another disease continually tending downward to inevitable death. but very often absolutely cured by arsenic. Having now used this medicine for nearly thirty years, he is much impressed with its value, and considers it one of the most remarkable in the Pharmacopæia. During the last year he was consulted by a gentleman between fifty and sixty years of age, who for several months had been getting so pale and breathless that he was obliged to give up the duties of his profession. He had long taken iron and plenty of animal food in vain. Wilks prescribed solution of arsenic in 5-minim doses three times a day. In a month he had color in his cheeks and had recommenced his work. When he met him two months afterwards he said he was quite well. In another case, that of a gentleman who had taken to his bed with ædema of the ankles, the patient was walking up the hills near Hastings a month afterwards. He went abroad, and had a relapse and died. The temporary effect of arsenic in nearly all these cases is very striking. It is to be noted that to give iron to all patients who are pale is poor practice, for even in chlorosis, where it is the best remedy, and the red corpuscles increase under its use, the disease may often be cured by aperients and good diet.

Tuberculous Peritonitis.—This is a disease curable by medical treatment. It might, perhaps, be more correct to speak of tuberculous disease of the bowels, seeing that it is very difficult to determine the depth of the intestine which is affected. In the recoverable cases the mucous membrane is probably not much involved. We know of the curability of this disease from coming across the remains of it in adults who have suffered from the complaint in their earlies years. Some of the most striking pictures, of what has appeared a resurrection from the dead, have been presented by this disease. Wilks has had two cases of young girls in private practice, and several others of boys and girls in hospital, who were lying in bed wasted to a shadow, with large, tumid, and painful abdomens, presenting, indeed, the appearance of persons in the last stage of consumption. To see these patients slowly recover, and present themselves, perhaps a year afterwards, stout and ruddy, has appeared a most marvellous metamorphosis. They have had the general treatment of cases of phthisis, good living, milk, wine or beer, cod-liver oil, and tonics, especially quinine. At the same time they have an active treatment as regards the abdomen,-iodide of potassium with or without the quinine, and linimentum hydrargyri rubbed over the abdomen, followed often by the tincture of iodine. Seeing the frequent occurrence of recovery, one cannot but think that herein the right method has been adopted.

Dysentery and Chronic Diarrhæa.—If a patient during several months is suffering from these disorders, and is wasting away with only one termination before him, and then the medical man steps in with his treatment, there can only be one conclusion to come to, -namely, that he has been cured by medicine. Simple diarrhœa is due to a temporary cause, and works its own cure; but when it persists it may generally be surmised that the large intestine has its mucous membrane in a morbid state; it may be inflamed or ulcerated, if certain symptoms are present. In these cases the ordinary diarrhœa medicines are of little use, and indeed he is very sceptical as to their value in any circumstances. He alludes to chalk mixture, catechu, etc., as well as to sulphate of copper. The only remedies in which he has faith are mineral acids and ipecacuanha, with perhaps small doses of opium. One great source of failure in treatment is want of perseverance in any one medicine. The disease being chronic, the cure is necessarily long (as Hippocrates observes), and yet this is constantly forgotten, the complaint

being regarded day by day as better or worse, according to the number of times the bowels are moved. There was the case of a sailor who had been discharged incurable from the navy. Wilks looked at his parchment and prescriptions. From these he selected one, and ordered him to persevere with it. After taking it three months he left the hospital convalescent. He had for a short time the benefit of the milk-and-suet-pudding diet, which means the abstinence from all other kinds of food. When patients with chronic looseness come to Wilks, he in the first place prescribes 5 grains of pulvis ipecacuanha co. three times a day, and subsequently orders some nitro-hydrochloric acid, with a smaller amount of the Dover's powder, or a simple ipecacuanha pill at bedtime. In speaking of mineral acids, his mind reverts to a very old experience of sulphuric acid in autumn diarrhœa. cholera epidemic, when he was physician to the Surrey Dispensary, he had a considerable number of cases of diarrhœa, which continued unchecked by opiates or the ordinary chalk mixture and logwood. In these cases a few doses of dilute sulphuric acid and tincture of cardamoms would at once arrest it. It may be remarked that both mineral acids and ipecacuanha have some special influence over other mucous membranes, such as those of the stomach and bronchial tubes.

The instances mentioned are those of a few well-marked diseases which are arrested and cured by the medical art. Of course there are a multitude of other cases where a remedy has been administered to relieve some morbid condition during the progress of an organic disease, and the tendency to death has thus been averted. For example, a patient with mitral disease is seen sitting up gasping for breath, with dropsy, and all the organs gorged with blood and serum. Digitalis is given, and after a few doses marked relief is obtained, and followed by subsidence of dropsy, pulmonary engorgement, and other effects of the heartdisease. When such a person is met walking about in the streets a few weeks afterwards, one cannot but marvel at the power of the drug. In many familiar complaints it is not at all unlikely that the temporary administration of a drug may have averted death. typhoid fever, long-continued wakefulness and irritability, which is wearing out the patient. may be corrected by an opiate, or at other times impending dissolution may be averted by a dose of brandy. That fatal hyperpyrexia may be arrested by a cold bath is well known.

CHLORATE OF POTASSIUM AS A GALAC-TAGOGUE.

In a most interesting communication, ALEX-ANDER HARKIN (Bull. Général de Thérapeutique, December 30, 1892) calls attention to the property of chlorate of potassium in increasing the secretion of milk, both in man and the lower animals. In the case of man, the author affirms that the remedy (simple and inoffensive) can be administered without danger to either mother or child. The medicament, he says, is composed of the two elements absolutely necessary for the genesis and functional activity of the blood, -oxygen and potassium. The potassium chlorate he administers in concentrated solution, in doses of 1 ounce (about 28 cubic centimetres) three times a day before meals. The solution is made by dissolving I ounce of the chlorate of potassium in 2 ounces (56 cubic centimetres) of water. From the beginning of the treatment, following the first twenty-four hours, there is noticed an increase in volume of the mammary glands, this resulting in a marked increase of the secretion of milk, with a corresponding amelioration in the health of both mother and child.

The same results were obtained in the cow, n a series of experiments. As in the case of the human being, in the cow the secretion of milk ceases after a certain period, and it has been found that by stimulating the lacteal secretion not only the health of the cow is enhanced, but also the growth of the calf. stimulation has similarly been brought about by the administration of the chlorate of potas-In these animals the drug proved also to be non-poisonous. The author relates the instance of a cow that, following an attack of puerperal fever, ceased to furnish milk, and in which the administration of the chlorate of potassium not only destroyed the fever, but also caused the re-establishment of the secretion of milk, and thus the calf was saved. Experiments were carried on with eight cows. The animals were fed, during four days, according to the following method: At 6.30 A.M., 12.700 kilogrammes of roots and 7 pounds of brewery grain; at 7.30 A.M., 10 pounds of hay; at 12 M., water; at 12.30 P.M., 6 kilogrammes of roots and 7 pounds of cotton-seed; at 5.30 P.M., the same as in the morning; and at 8.30 P.M., 10 pounds of hay. On the fifth day, and during the following twelve days, each cow received, besides 'the usual nourishment, 7 grammes of the chlorate of potassium three times a day. According to the detailed table given in the original, it is seen that the secretion of milk was considerably increased. The ages of the cows ranged from two and a half to five years.

THE COMBINATION OF CORROSIVE SUB-LIMATE AND TARTARIC ACID.

Yvon and Berlioz (Bull. Général de Thérapeutique, December 30, 1892) call attention to the official combination of corrosive sublimate and tartaric acid as recommended by the Académie de Médecine on the report of Budin, made in 1890. Yvon and Berlioz affirm that this antiseptic combination is a sufficiently stable preparation. The only precaution to be taken in producing it is to see that the tartaric acid is pure and free from moisture, and that in making the mixture the mortar is perfectly dry. The mixture, divided in powders and well wrapped in paper, must be kept, as much as possible, free from moisture and the light. Under these conditions no alteration is likely to occur. The combination is made as follows:

R. Corrosive sublimate, .25 gramme; Tartaric acid, I gramme; Alcoholic solution (five per cent.) of indigo carmine, gtt. i.

This last solution is prepared by dissolving five grammes of dried and pulverized indigo carmine in ninety-five grammes of alcohol at 20°. One drop of this solution contains fifteen tenth-milligrammes of indigo carmine.

### GUAIACOL IN THE TREATMENT OF PHTHISIS.

PETER (La France Médicale, January 6, 1803) writes of the therapeutic action of guaiacol in pulmonary affections. He details several cases, principally of phthisis, in which good results were obtained under the hypodermic use of the drug. The author refers to similar observations made by Labadie-Lagrave, Picot, and Weill, all of whom have employed the remedy subcutaneously with the same good effect. Of twenty-five cases treated by Peter, this author observed three deaths, two cases of hæmoptysis, and one of embolism, which also terminated in death. In all the rest there was a notable amelioration. The author believes that the remedy exercises its action upon the lung-tissue and not upon the bacilli. Being eliminated chiefly by the respiratory tract, it acts like the sulphuretted hydrogen of sulphur waters, converting a tubercular into another kind of inflammatory process. Following the elimination of the drug there is a diminution

and often a disappearance of the catarrhal secretion. Under the guaiacol treatment there is also noted an increase of the appetite, this being due to an irritation of the gastric mucous membrane caused by the medicament. has likewise seen guaiacol do good in other diseases of the respiratory tract, such as dilatation of the bronchi, chronic bronchitis, and fetid bronchitis, an affection which he designates under the name of curable gangrene of the lungs. In intense catarrhal bronchitis, and in dilatation of the bronchi accompanied with gangrene of the bronchial walls, he considers guaiacol in small doses superior to creosote. The author generally employs the drug according to the following combination:

> B. Sterilized oil, 100 grammes; Guaiacol, 30 grammes; Iodoform, 5 grammes.

Of the guaiacol itself he gives subcutaneously .50 gramme at a dose. Picot's formula is this:

R Sterilized oil, 100 grammes; Guaiacol, 5 grammes; Iodoform, 1 gramme.

Of this solution a daily injection of from 2 to 3 cubic centimetres, containing .10 to .15 gramme of guaiacol, is administered.

### HELIANTHUS ANNUUS AND METHYLENE BLUE IN THE TREATMENT OF INFANTILE MALARIAL FEVER.

In a communication to the Société de Thérapeutique, Moncorvo (*La Nouveaux Remèdes*, January 8, 1893) relates his experience with these two drugs in the treatment of malarial fever of children.

Helianthus Annuus .-- Of this drug he employed a tincture of the flowers and leaves and an alcoholic extract. Both of the preparations were used by themselves, so that the effects produced could not be attributed to anything else. The author treated sixty-one children,—thirtythree boys and twenty-eight girls,—their ages ranging from one month to twelve years. the majority of these cases a cure was more promptly effected than if quinine had been employed. When the treatment with the helianthus was regularly followed, the use of the cinchona alkaloid was entirely discarded, unless serious and alarming symptoms were developed which necessitated the action of quinine. The tincture of helianthus was given in daily quantities of 10 grammes, in divided amounts, with an interval of two hours between each dose. The alcoholic extract was administered in daily doses of from 1 to 6 grammes. The remedy was well tolerated even by the youngest of the little patients. The helianthus, therefore, is considered by the author an excellent substitute for the cinchona alkaloid.

Methylene Blue.—With this medicament he treated thirty-six cases of infantile malaria, the ages of the children varying from twenty-four days to fourteen years. He obtained ten cures and three ameliorations. In fourteen cases the results were not well marked, owing to an irregularity or interruption of the treatment. The drug was administered in doses of from 20 to 40 centigrammes, in divided amounts, every two hours. In cases of recovery, this took place in from twenty-four hours to a few days. The remedy was well borne, and in only one case was there produced a vesical tenesmus of short duration. Other untoward symptoms, like nausea, vomiting, diarrhœa, polyuria, and albuminuria, as pointed out by Guttmann and Galliard, were not observed. The urine and the stools were always colored blue; the same coloration was noticed on the mucous membrane, this phenomenon persisting for twentyfour hours after the suspension of the drug. may be added that the medicament was not associated with other remedies, except purgatives. intestinal antiseptics, etc., which in themselves exercise no antimalarial action. Methylene, according to Moncorvo, is almost tasteless, and is, therefore, on this account, preferable to quinine, especially in the case of children.

# CHROMIC ACID IN THE TREATMENT OF DIPHTHERITIC ANGINA.

In the general treatment of diphtheritic angina, Lescure (La France Médicale, January 13, 1893) insists, first, in stimulation of the patient in order to render the system sufficiently powerful to resist the general poisoning; and, secondly, to facilitate the destruction and elimination of the toxine products. For the first indication he recommends a light but stimulating diet, consisting of broths, vegetable-soup, pea-soup, meat-juices, eggs, chocolate, cream, and the like, this diet to be associated with tonics to combat the asthenic condition, such as nux vomica, cinchona, and alcohol. The alcohol may be administered in the form of Bordeaux, Malaga, and cognac or rum, in from 30 to 60 grammes in the course of the twenty-four hours. To enhance the elimination of the toxines by the urinary apparatus, the administration of milk, coffee, tea, and alcohol, in the form of cognac or rum es

cially, is recommended. The author advises, besides, the following prescriptions:

For local applications:

- R. Chromic acid, I gramme;
   Distilled water, 5 grammes.
- 2. R Tannic acid, 6 grammes; Glycerin, 30 grammes.

### For internal administration these:

- R Tincture of eucalyptus, 3 to 10 grammes; Gum-arabic water, 90 grammes; Syrup of orange, 30 grammes. M.
   Sig.—A tablespoonful in the twenty-four hours.
- 4. B. Tincture of nux vomica, gtt. xl;
   Extract of cinchona, 5 grammes;
   Syrup of orange, 100 grammes;
   Malaga wine, 200 grammes. M.
   Sig.—A dessertspoonful three times a day.

The minimum dose of the tincture of nux vomica for children is 3 drops every twenty-four hours, but this amount can be increased according to the age of the patient to 5, 6, and even 8 drops a day. The last two mixtures are administered from the first day of the disease.

Of fifty-four cases treated by the above method the author did not meet with a single death. He saw among these five cases of mixed diphtheria of a highly-infectious character, in which bacilli and the streptococcus pyogenus were found at the same time. ages of these patients ranged from twentyseven months to three, four, and seven years. The duration of the malady was from nine to fifteen days. In nineteen cases he observed the existence of marked submaxillary adenopathy, albuminuria, the consecutive paralysis of the soft palate, and in five of them the symptoms were accompanied by a slight paralysis of the inferior extremities. In fourteen cases there was no paralysis, but the albuminuria in the urine and the ganglionar disease were prominent. In these cases the duration of the malady ranged from six to seventeen days, the ages of the little patients being from seventeen months to nine years. In the other sixteen cases the treatment was instituted from the first or second day of the disease. In them the affection ran a mild course, and a cure was usually obtained in four or five days, the two or three applications of the chromic acid being sufficient to destroy the false membranes. It is worthy of note that the disease was not propagated to the larynx in a single one of the cases treated as above.

The author believes that the treatment of diphtheritic angina by the means described is

advantageous for several reasons: First, it shortens the duration of the malady; secondly, it is not painful, and does not cause secondary inflammatory reaction; thirdly, while the acid destroys the false membranes, it does not injure the healthy mucous membranes; fourthly, the treatment is of easy application. base of the whole treatment is, of course, the local application of the chromic acid, since this agent, by destroying in a rapid manner the false membranes, lessens at the same time or immediately arrests the production of toxines. The author, however, considers advantageous the use of the tannic acid and the tincture of The false membranes are touched eucalyptus. once or twice in the twenty-four hours with the chromic-acid mixture above given. The tannicacid applications may be made three or four times only.

### THE PRODUCTION OF ANÆSTHESIA BY THE COMBINED USE OF BROMIDE OF ETHYL AND CHLOROFORM.

POITON-DUPLESSY (L'Union Médicale, January 28, 1893) recommends the combined use of bromide of ethyl and chloroform for the prompt and effective production of anæsthesia. In the use of this method he claims priority for The author advises the following France. modus faciendi: 1. Pour into the cone, or upon a compress, the ethyl bromide, but be careful not to produce too rapid an action; make the patient breathe from two to five minutes. As soon as the patient begins to lose consciousness (without excitement), and when the face exhibits a condition of congestion and the pupils begin to dilate, substitute chloroform, and pour this in a methodical manner. In this way a complete anæsthesia is obtained sometimes directly, sometimes after a moderate and short period of excitability. 3. In certain cases (especially in alcohol-drinkers) in which this excitation is somewhat exaggerated, it is largely suppressed by the readministration of the bromide of ethyl. In this manner the most inveterate drinkers can be anæsthetized. 4. Once the anæsthesia is established (with the advent of muscular relaxation, pupillary contraction, and abolition of the oculo-palpebral reflexes), it can easily be prolonged by a small dose of chloroform. According to the writer, with the association of these two anæsthetics, whose action on the mucous membranes, on the heart, and on the blood-pressure is absolutely different, the anæsthesia is produced, while the toxic effects caused are reduced to a minimum.

### THE PHYSIOLOGICAL ACTIONS OF THY-MACETINE.

From an experimental research on the physiological actions of thymacetine, E. MARANDON DE MONTYEL (Bull. Génér. de Thérapeutique, January 30, 1893) has drawn the following interesting conclusions:

- 1. Thymacetine does not seem to exercise an action on sleep, the intellect, the vasomotor system, the genital organs, the secretions, or the intestines.
- 2. Thymacetine, without influencing any of the other reflexes, produces in a few instances a marked double dilatation of the pupil, but without disturbances of vision, the symptom appearing during the first hour, and lasting from thirty to forty minutes.
- 3. Thymacetine sometimes produces, immediately after its administration, but only for a short time, however, dizziness, associated with a slight degree of intoxication.
- 4. In three-fourths of the cases thymacetine causes a slight headache, this lasting several hours, appearing usually at bedtime, and, rarely, next morning on awakening.
- 5. Thymacetine always increases, for about two hours, muscular force, as measured by the dynamometer.
- 6. Thymacetine increases the bodily temperature to about one degree, the elevation, like the decline of the same, occurring gradually, returning to the normal point in about two hours.
- 7. Thymacetine, during a period of two hours, increases the number of inspirations without modifying their rhythm.
- 8. The drug also causes, during the same period of two hours, a rise of the arterial pressure and an increase in the number of pulsations, but without producing cardiac palpitations.
- 9. Thymacetine, in two-thirds of the cases, causes towards the afternoon great lassitude, which often persists till the following day, even after waking; but there are no concomitant physiological or psychological disturbances produced.
- 10. Thymacetine, in all cases, modifies micturition in three ways: a, it accelerates or delays the desire of urinating; b, it causes a urethro-vesical spasm, a momentary retention, and dysuria, but these disturbances soon disappear; c, occasionally during the passage of urine a scalding sensation is felt, which also soon disappears; these occur singly or in combination.
- 11. Exceptionally before micturition, thymacetine produces shooting urethral pains.

- 12. Thymacetine, in two-thirds of the cases, causes a bitter taste, accompanied with a sore mouth and a coated tongue, but no special odor of the breath.
- 13. In most individuals thymacetine produces, during an hour or more, a burning gastric pain, more often localized, but sometimes felt all over the body; rarely, a scalding sensation is felt along the cesophagus.
- 14. Thymacetine is capable of producing a marked thirst, anorexia, and also gastric disturbances, which disappear on the suspension of the drug.
- 15. In a general way the organs become rapidly accustomed to the action of thymacetine, especially the bladder and the urethra; the stomach, however, is the only organ to become more and more susceptible to the influence of the remedy.
- 16. All the preceding physiological actions are produced by small doses of thymacetine; still, the sensations of dizziness, the temperature, digestion, and micturition are influenced in direct proportion to the amount of the drug ingested.
- 17. Of all nervous disorders, general paralysis is the least susceptible to the action of thymacetine; in such cases dilatation of the pupil, or dizziness, was never observed, and in them urethro-vesical spasm was less frequent and less marked than in cases of insanity; on the other hand, in paralytics the spasm occurred more frequently than in epileptics.

# THE MECHANICAL TREATMENT OF LOCOMOTOR ATAXIA.

In a well-prepared article, Rubens Hirsch-Berg (Bull. Génér. de Thérapeutique, January 30, 1893) discusses the method of Frankel in the treatment of locomotor ataxia, which consists of three categories of movements, as follows:

- 1. Simple muscular contractions,—that is, the action of one single muscle or a physiological group of muscles, such as flexion, extension, adduction, abduction, etc.
- 2. Simple co-ordinated movements, such as the catching of an object at a certain distance, touching the end of the nose with the indexfinger, raising the hand to the mouth, etc.
- 3. Compound co-ordinated movements, such as writing, catching objects successively at different distances, carrying a full spoon to the mouth, etc.

The principle of these movements has been applied to the inferior extremities by Hirschberg in cases of locomotor ataxia. The author

details two interesting cases, and refers to many others occurring in the service of Dujardin-Beaumetz, in which the method gave satisfactory results. Hirschberg's conclusions are as follows:

- 1. The ataxic movements of tabetic patients may be markedly ameliorated by the method of Frankel.
- 2. The exercises of such gymnastics increase and develop the muscular power of the affected extremities.
- 3. The exercises, in which the muscular contractions are placed under the control of the will-power of the patient, ameliorate the coordination of the movements.
- 4. By encouraging the patient and inspiring him with confidence regarding the use of his limbs, we may relieve his mind from morbid ideas (pathophobia), a frequent cause of the gravity of motor functions in tabetic patients.
- 5. This treatment is indicated in all the stages of *tabes dorsalis*. The best results, however, are obtained before the patient has ceased to be able to walk.
- 6. The treatment is to be considered contraindicated in the *tabes dorsalis* of a rapid march, —that is, when the symptoms are developed in less than two years, when the general condition of the patient is poor, and especially when the articulations are affected.
- 7. This treatment does not exercise any influence on the cardinal symptoms of *tabes dor-salis*, except the ataxia of the movements.

# THE VALUE OF THE INJECTION OF ORGANIC LIQUIDS IN THERAPEUTICS.

Apropos of the abstracts which have been published during the last few months in the THERAPEUTIC GAZETTE concerning the use of extract of thyroid gland, or other glands, or other portions of the animal economy, in the treatment of various diseases, an editorial summary in the Boston Medical and Surgical Journal for January 12, 1893, is interesting, as showing clearly our present position in regard to this interesting question.

In a recent article on "The Progress of Therapeutics in 1892," the introduction of the injections of organic liquids, as being an advance step in the treatment of certain nervous diseases, and in particular of locomotor ataxia and neurasthenia, is discussed by Dujardin-Beaumetz.

Since the date of Brown-Séquard's first communication (June, 1889) there has been great

progress, both in the preparation of these organic liquids and in their therapeutic applications.

To-day, thanks to Arsonval's sterilizing methods and painstaking technique, organic liquids which are absolutely aseptic can be obtained, and are furnished by a sufficient number of reliable pharmacists. If syringe and needle are sterilized, and suitable care be taken, these injections cause no local irritation, or, at least, no harm.

Dujardin-Beaumetz has the past year made in Cochin Hospital a great many of these injections, using either Arsonval's organic liquids or such as were made in the Cochin laboratory. In not a single instance was the injection attended with any local inflammatory accident. The greatest danger results from an alteration of the liquids; hence it will not do to use solutions that are at all turbid. The injection material is now put up in vials hermetically sealed, there being just enough in each vial for one injection.

For the testicular liquid vaunted by Brown-Séquard there have been of late substituted macerations of the brain and cord, introduced by Constantin Paul under the name of "nervous transfusion liquid;" then extracts of the thyroid gland, the pancreas, and the kidney. to the effects of these injections, good observers declare that there is no difference between the action of the testicular extract and that of the spinal marrow, prepared as Constantin Paul advises. This action is summed up in one sentence: "The tonicity of the entire economy is improved." This, says Beaumetz, is undeniable, and is remarked alike by patients without as by those with organic lesion.

In patients afflicted with cerebral or spinal sclerosis, who have been treated by injections of gray nerve-matter, there is prompt disappearance of their pains, and especially of the douleurs fulgurantes. In multiple sclerosis the tremblings are alleviated. Dujardin-Beaumetz would not be willing to affirm that a positive cure has in any single instance been obtained, although Brown-Séquard, at a late meeting of the Society of Biology, declared that complete cure in locomotor ataxia was the rule where the testicular injections have been used. Beaumetz is disposed to doubt whether the cases to which. Brown-Séquard refers as cured were really cases of sclerosis of the brain or cord. It is well known that hysteria furnishes instances of pseudo-ataxia and pseudo-sclerosis.

It may be, with still greater reason, maintained that the pretended cures of cancer by

the injections of organic liquid are cases of mistaken diagnosis. What can, however, be affirmed is, that in certain cases of marasmus at advanced periods of cachectic disease, cancer, cholera, etc., tonic effects amounting to a remarkable amelioration have been obtained.

In neurasthenia and nervous prostration from overwork, and in hysteria, injections of these animal extracts have given especially gratifying results.

Physiologists and physicians are naturally puzzled as to the modus operandi of these injections; in fact, the exact composition of the organic liquid is unknown, and it is not possible to conjecture what element, if any, produces the favorable therapeutic results. Hence attempts have been made to get rid of the difficulty by employing some one isolated principle obtained from the animal extracts. Much has been written about Poehl's spermine, designated as the true remedial agent of the testicular liquid, and which Rostchinin, in the London Medical Record, declares to be "true spermine," having used it to advantage in nervous affections, diabetes, pulmonary tuberculosis, and collapse, and for which he predicts a brilliant future. Another attempt in the same directions has been made at Brussels by Crocq, who makes use of the neutral phosphate of sodium in two-per-cent. solution in cherrylaurel water. He injects from 1 to 2 cubic centimetres of this solution, and claims very powerful tonic effects. He affirms that these injections have the same effects as the testicular liquid or Constantin Paul's maceration of gray nervous matter, being curative in purely functional and truly palliative in organic affections of the nervous system.

Dujardin-Beaumetz remarks how difficult it is to decide as to the value of these organic There have not yet been a sufficient number of clinical trials to warrant a deliberate and definite judgment; but if any a priori reasoning is admissible in considerations of this kind, it must be admitted that the principle on which this medication is founded is very strange. To inject in a diabetic patient an organic liquid from the pancreas, or in a patient affected with urinary insufficiency a glycerite extract from the kidney of an animal, can neither, in the one case, restore to soundness the atrophied pancreas, nor in the other, the altered and cirrhosed kidney. One cannot but think that in such cases something in the nature of hypnotic suggestion has had something to do with the result. The notion that one may by such injections restore or make compensation for an organ diseased or destroyed is absurd. But the appeal must be made to clinical facts, and the new methods must be tested under much more rigorous conditions, with carefully-selected typical cases, before we can definitely judge of their merits.

## THE TREATMENT OF DIABETES MEL-LITUS BY MEANS OF PAN-CREATIC JUICE.

DR. HECTOR W. G. MACKENZIE, in the British Medical Journal for January 14, 1893, states that in the British Medical Journal for January 7, Dr. Mansell-Jones suggests that, as the juice of the thyroid gland appears to be almost a specific in myxcedema, pancreatic juice, administered before or after meals, should be given a fair trial in diabetes, as this disease, he adds, in most cases, appears to be due to disease or disordered function of the pancreas.

Neither pathology nor physiology, however, lend much encouragement to the hope that diabetes mellitus will prove tractable in such a simple way. In the first place, the pathogenesis of this disease is much more complex than that of myxœdema, and disease of the pancreas accounts for probably only a fraction of the cases of this malady. In the second place, even if it were a fact that in most cases diabetes was due to disease or disorder of the pancreas, the analogy of this doubly-active gland, both excreting and secreting, with the ductless thyroid gland is not a very close one. There is some reason, however, on theoretical grounds, for the belief that pancreatic juice might have some beneficial effect even in non-pancreatic diabetes.

The recent researches into the pathology of the pancreatic form of diabetes mellitus, of which a most interesting account was given by Dr. Vaughan Harley in the British Medical Journal for August 27, 1892, make it very probable that, in addition to the well-known tryptic, diastatic, fat-splitting, and milk-curdling ferments, a glycolytic ferment is also produced by the pancreas. Assuming the existence in the normal pancreas of this latter ferment, it is possible that the administration of a pancreatic extract by the mouth might have some beneficial action in diabetes mellitus by assisting to destroy the sugar in the blood. Acting on this idea, therefore, Mackenzie anticipated Dr. Mansell-Jones's suggestion, and for some time past has been treating in a tentative way two pronounced cases of diabetes mellitus under my care at the Royal Free Hospital, by the administration of liquor pancreaticus, in 1/2-ounce doses, given three

times a day, immediately after food. It is the generally-received opinion that, when given in this way, the liquor has no appreciable digestive power, so that we may put the latter effect on one side. No other medicine was given after this treatment was started, and in every respect the patients remained under the same conditions as before.

In both cases the patients have assured me they have experienced benefit from the treatment. He should not have attached so much importance to their statements had it not been that, without any suggestion on his part or collusion on the part of the patients, who attended on different days, there was a remarkable agreement in the accounts they gave of this benefi-They both said they had lost to a cial effect. great extent their feeling of lassitude and languor, and felt stronger in every way. thirst, moreover, had considerably lessened, and they had passed a smaller quantity of urine. These beneficial effects, moreover, have continued. The specific gravity of the urine and the relative amount of sugar have, on the other hand, not been affected.

As to an in-patient under the care of his colleague, Dr. Samuel West, his house-physician, Dr. Rendel, stated that since the administration of liquor pancreaticus the amount of fluid imbibed during the twenty-four hours, which had previously averaged twelve pints, had fallen to six pints, with a similar decrease in the amount of urine passed.

In a disease like diabetes we must be thankful for even small mercies. Mackenzie would rather find an improvement in the general condition of the patient, increased strength, diminished thirst, and diminished quantity of urine as a result of treatment, than a mere diminution of the amount of sugar in the urine without such improvement. He would have preferred, of course, to have found both results. It is evident that liquor pancreaticus is no specific, but the effects in these cases are encouraging enough to induce us to make further trial of it, and it is possible that in cases of true pancreatic diabetes the benefit might be greater.

# THE TREATMENT OF DIABETES BY PANCREATIC EXTRACTS.

NEVILLE WOOD contributes another paper on this subject to the *British Medical Journal* for January 14, 1893, in which he says: This plan, proposed in the *British Medical Journal* of January 7, occurred to me early last year as worthy of a trial from certain theoretical con-

sideratious. I append a brief summary of two cases, in which the method was employed at my suggestion.

CASE I.—This case at the Chelsea Infirmary was kindly placed under the treatment by Mr. Moore. It was of the so-called pancreatic type. A boy, aged thirteen, whose father had recently died of diabetes, had suffered from symptoms of diabetes, before beginning this treatment, for six months. From January 1, 1892, he was placed on diabetic diet, and was given first codeine, from which he received no benefit, and then morphine, under which he improved. The zymin treatment, with diet as before, was begun May 18. His general condition was bad; appetite not ravenous; thirst great; weight, five stone ten and three-quarters pounds; quantity of urine in twenty-four hours about ninety-nine ounces; specific gravity 1036; sugar, estimated at 6.5 grains per ounce. Zymin was given in increasing doses, with the subsequent addition of sodium bicarbonate, and finally pancreatin pills, coated with keratin, were substituted. A daily record of the amount and specific gravity of the urine was kept, and quantitative estimations of sugar were made with Fehling's solution. The treatment was continued till August 21, when he left the infirmary. Unfortunately, owing to deception on the part of the patient, and dietetic indiscretions, which caused diarrhoea on more than one occasion, many of the observations are valueless and, with the amount of comment necessary, would be out of place in this summary. What is certain is, that his general condition vastly improved, his weight increased seven and a quarter ounces, and thirst diminished. During the first ten days of treatment the amount of urine in twenty-four hours averaged seventy-eight ounces, and for the last ten days before leaving it averaged thirty-five ounces, while the specific gravity for the same periods averaged 1036 and 1027 respectively. The first reliable quantitative estimation of sugar, made May 20, gave 6.5 grains to the ounce; the last, made at the end of June, 4.5 grains. The boy was readmitted November 5, and is still in the infirmary. He is improving under opium, but has not reached the standard of last summer under the pancreatic treatment.

No definite deduction can be made from this case, owing to the facts already mentioned,—that he was improving at the time zymin was commenced, and the intractability of the patient, while the summer weather and the continuance of restricted diet were in his favor. Its value is also less because press of work pre-

vented me from making a sufficient number of quantitative estimations towards the close of the case. Nevertheless, the improvement in general condition, and in some of the cardinal symptoms of the disease, while he was taking pancreatic preparations, compared with the periods under opium and the alkaloids, are perhaps worthy of record.

CASE II.—The observation of this case at St. George's Hospital was kindly permitted me by Dr. Cavafy. A woman, aged twentyfour, who gave no family history of diabetes, had suffered from symptoms for about four months before beginning pancreatic treatment. Previous to this, diabetic diet and codeine Pancreatic treatment was comwere given. menced June 10, 1892, and continued till she left the hospital on July 19. The diet was not changed, and zymin, etc., were used, as in the previous case. At the outset the general condition was that of debility, the amount of urine varied between 2500 and 4000 cubic centimetres, specific gravity about 1034, and the percentage of sugar 7. The general condition of the woman improved, and she gained three pounds in weight, but she complained of increased thirst. The amount of urine remained about stationary, and while the specific gravity ranged lower, the percentage of sugar increased to 10. She went to the Convalescent Hospital at Wimbledon, and left there for her home September 21, still further improved in her general condition. On September 26 she was readmitted at St. George's, rapidly fell into coma, and died on the 27th. The necropsy showed no notable lesion, and the pancreas is described as "not abnormal, soft, like the rest of the body."

In this case, of the cardinal symptoms, diuresis was unchecked, while thirst and the excretion of sugar increased. The increase of weight is possibly attributable to the better assimilation of her food, perhaps of the freely-supplied hydrocarbon element. The fall in specific gravity may perhaps be explained on a somewhat similar hypothesis.

From the observation of these two cases I have little hope that diabetes can be influenced by pancreatic preparations in the same way that myxœdema is by thyroid juice. A subsequent perusal of the interesting monograph on "Pancreatic Diabetes," by Dr. Thiroloix, has inclined me to agree with that author, while in some cases pancreatic lesion is a probable factor, it is not the chief one, and we must look for the essential pathology in some part of the nervous system, perhaps in the great sympathetic ganglia of the abdomen.

# THE NEUTRAL SULPHATE OF DUBOISINE IN MENTAL DISEASES.

The therapeutics of this drug have of late attracted considerable attention, both in Italy and in Germany. It seems to have been clearly made out by a large number of authorities in both countries that duboisine has a decided sedative and hypnotic action, especially in cases of insanity. An excellent account of this drug is to be found in a paper by Belmondo, published in the Riv. Sperim. di Freniatria, April, 1892. There seems to be some doubt whether the drug acts in every case as both a sedative and hypnotic; it seems probable that this is the case in most instances.

DRS. MAZZOCCHI and ANTONINI (Riforma Medica, November 15, 1892) have tried the remedy in their asylum at Bergamo, extending their observations over a considerable time in, order to compare patients treated in this manner with others subjected to the ordinary methods of treatment. Twenty men and ten women received the injections of sulphate of duboisine. Nearly all of these exhibited symptoms of aberration, varying from a slight exaltation of ideas to furious mania. More than two hundred injections were given, varying between ½ and 2 milligrammes, but never exceeding this higher limit in twenty-four hours. The injections were in no case followed by unpleasant phenomena, such as vomiting, vertigo, or visual hallucinations, but in nearly every instance there occurred, a few minutes after the injection, mydriasis, a sense of general weakness, and a diminution of the pulserate. In two-thirds of the cases a full hypnotic effect was realized fifteen or twenty minutes later, the sleep lasting for five or six hours. The drug does not appear easily to lose its effect through the establishment of tolerance, for one patient, within the space of two months, received as many as fifty doses of I milligramme, this being as efficacious at the end as at the beginning of the period. There seems to be no advantage, therefore, in giving larger doses. As a sort of control, other patients were treated with injections of atropine or morphine, but in no case were the results as good. In order also to guard against the influence of suggestion, injections of water were also occasionally substituted for those of the drug, but in every case without result. The authors agree also with Belmondo in asserting that the intelligence may improve very markedly as the result of the injections; it was certain, too, that they had a markedly quieting effect in the cases of violent mania. It is too much to say, however, that all such cases received marked benefit. There were a few in which no very distinct action was evident. Individual peculiarities seemed to militate against a uniformly successful record, but this is nothing more than would be expected. Complete indifference was only manifest in a single case, one of severe mania with delirium; but this is not sufficient to prevent the authors from having a high opinion of its efficacy in the treatment of insanity.

### DUBOISINE IN HYSTERO-EPILEPSY.

Recent observations appear to show that in duboisine we have a drug which may be of considerable value in hystero-epilepsy. Cases have been recorded by Samuely and Belmondo in which this drug produced good results when no other treatment did any good. Professor PIETRO ALBERTONI has recently recorded three similar cases in which the same treatment was adopted with success. The history of one of these is as follows: The patient, a girl of twenty-three, had very frequent attacks, often as many as three in an hour, which began with a slight convergent squint, loss of speech, and partial loss of consciousness. All the muscles then rapidly became rigid, especially those of the neck, leading to marked opisthotonos; the pulse became also arrested during frequent convulsive attacks, being increased in frequency in the intervals. Recovery from these attacks was, as a rule, rapid, but a great number of drugs, especially morphine and atropine, had been tried without producing any effect as regards diminishing the frequency of the attacks, and the family was in consequence in great alarm. Injections of duboisine were then commenced, with the result that half an hour after the first injection of .0004 gramme the patient went to sleep, remained the whole night in the same condition, and had only three attacks during Injections of .5 milligramme the next day. were given every evening for a few days more, with the result that the convulsions ceased altogether, and general treatment removed the general constitutional disturbance. The other two cases were very similar. Albertoni thinks, therefore, that, judging from his own cases and those of Samuely and Belmondo, duboisine may be considered almost a specific against hysteroepilepsy.

#### THE THERAPEUTICS OF TETANUS.

A glance at the medical literature of the past ten years will show that the number of drugs which have been recommended during this

period as curative of tetanus is very large. Professor Albertoni has taken the trouble to classify the results obtained by various treatments in a large number of cases, and by this means has arrived at the following conclusions, which are of considerable general interest:

- 1. That tetanus is not half such a fatal disease as one has been inclined to think.
- 2. That it is cured by the most varied methods of treatment.

This is tantamount to admitting, according to a well-known therapeutic canon, that the disease has a tendency to spontaneous cure.

According to the statistics of Sormani, the mortality from the disease in the Italian hospitals was about forty-four per cent. during the quinquennial period,—1882-87. In other words, fifty-six cases out of every hundred recovered, and figured in the records of therapeutic triumphs. Now, it is a fact which has been known from the time of Hippocrates, that cases of tetanus may be classed under two headings,-those which run an acute, rapid course, and those running a slow, chronic course. was recognized that these last cases often recovered spontaneously, and if we study modern records, it becomes plainly evident that it is just these cases which our modern drug treatment "cures." Among the recent specifics for the disease we may reckon paraldehyde, urethane, antipyrin, sodium salicylate, carbolic acid, and a number of similar drugs, and under these measures the mortality has sunk to about twenty-one per cent. The author hints that it is rather the introduction of antiseptic precautions than the application of new remedies which has improved our statistics. Quite recently a new idea for treatment has been tested. In 1890, Behring and Kitasato succeeded in rendering rabbits immune to tetanus by means of iodine trichloride. They found that the blood of such immunized animals had acquired the power of protecting other animals, and in rats of curing tetanus after symptoms had appeared. A clinical trial of such blood has, however, been made by Baginski, and more recently by Renon, but without success. The results obtained by Tizzoni and Cattani with their antitoxine-a substance derived from the blood of immunized animals by precipitation with alcohol-appear more satisfactory. But Albertoni protests that it is only the successes and not the failures which are published, and if this imputation be true, the method must be to some extent discredited.

If we consider the drug treatments alone, it appears that chloral has given the best results, whether we consider the relief of suffering or the cure of the disease. Verneuil asserts that

in the great war of 1870 this drug produced fifty per cent. of cures.—Annali di Chimica, vol. xvi., series iv., 1892.

# STRYCHNINE DURING PREGNANCY AS AN AID TO LABOR.

JOHN MILTON DUFF, M.D., at the meeting of the Pittsburg South Side Medical Society, on February 13, 1893, made the following remarks in regard to the subject of "Tardy Labor." The discussion prompted him to speak of a remedy he has administered when occasion offered during the past few months. In speaking of it, he states that his observations have not been sufficiently numerous to justify him in giving a positive opinion. Nevertheless, whether by accident or otherwise, his results, so far in the majority of cases, have been most gratifying.

He referred to the administration of strychnine as a remedy preparatory to labor where there is general debility and want of muscular tone; in women who previously have had tardy labors from irregular and feeble uterine contractions and from want of tone in the auxiliary abdominal muscles; in women who have a history of post-partum hemorrhage, and of want of retraction and contraction of the uterus subsequent to delivery; in those who are subject to severe after-pains necessary for the expulsion of clots in the uterus. In all such cases a treatment should be instituted of gr.  $\frac{1}{80}$  of strychnine three times a day, beginning from six weeks to two months prior to the anticipated time of delivery, and kept up until a week or ten days before delivery, when, if it is well borne, it may be increased, according to the judgment of the attendant, to gr.  $\frac{1}{40}$  or gr.  $\frac{1}{30}$ and in some cases to gr.  $\frac{1}{16}$ .

The cases in which he has administered it for the most part were those with which he had had experience of tardy labors, post-partum hemorrhage, and severe after-pains. In nearly all of them the improvement over past experiences was so great that the patients themselves were cognizant of it and expressed gratification.

# THE USE OF CALCIUM CHLORIDE IN PNEUMONIA.

CROMBIE, in the *Indian Mail Gazette* for February, 1893, places on record twenty-two cases of acute lobar pneumonia which ran a singularly mild course on a treatment which consisted simply and solely of chloride of cal-

cium in doses for adults of from 5 to 15 grains every four hours. These were, as a rule, cases of average severity, several of them being double pneumonia, one of these being fatal in a child, both of whose lungs were affected throughout. The remarkable feature in this series of cases was the subsidence of the fever, after two or three days of the treatment, to a practically normal point (notwithstanding the continuance of the physical signs), and the absence of all the distress and danger attendant on high temperatures. In not one of these cases was any antipyretic given after the commencement of the treatment with chloride of calcium. Another remarkable point noticed in several of them was the arrest of the disease in the stage it happened to be in when the treatment was begun. If this was in the first stage of pneumonia, the physical signs continued those of the first stage to the end, the crepitation and dulness gradually disappearing together, without the stages of tubular breathing, etc., occurring. If the treatment was begun in the stage of tubular breathing, this simply became less and less distinct as the dulness disappeared, and there was no stage of redux crepitation.

In several of the cases there was a distinct extension of the pneumonia while the patient was under the influence of the calcium salt, either to an adjoining portion of the same lung or there was an invasion of the other lung. This generally, when it occurred, gave rise to a temporary recrudescence of the febrile symptoms, which again quickly subsided.

The mortality in this series of cases was under five per cent.; and, according to Osler, hospital statistics show a mortality of from twenty to forty per cent. Of 102 cases treated at the Montreal General Hospital, the mortality was 20.4 per cent., while in the Charity Hospital at New Orleans it was 20.01 per cent. But the author does not need to go so far for comparative statistics, for he has those of the very hospitals where this series of cases was treated. He has the statistics of the Demerara Emigration Hospital for the years 1889, 1890, and 1891, which show 199 cases of pneumonia treated in that depot, mostly on the expectant plan, with 63 deaths, or 31.6 per cent. An analysis of the figures shows 202 per cent. of deaths among males, 31.2 per cent. among females, and 44.8 per cent. among children. In the Trinidad depot during the same year 11 cases of pneumonia were treated, with 5 deaths, 4 of the deaths occurring among 5 children attacked. In 1892, under the chloride of calcium treatment, there were in this depot 8

cases, 7 being children, with no deaths. Now, lest it might be said that these favorable results might have been due to a milder type of the disease in 1892, it may be mentioned that, owing to a misunderstanding, the chloride of calcium treatment was not adopted in one recent case in one of these hospitals, and this case went rapidly on to the formation of an abscess in the right lung, which the man is now slowly coughing up.

The author states that he is aware of the fallacies which surround observations such as he has recorded as the basis of this paper. He is aware, for instance, that the date of commencement of several of his cases is uncertain, and that the crisis may occur in pneumonia as early as the fifth, and is not unusual on the seventh and ninth days; and he would not present this new treatment if his cases had been less numerous than they are, or had exhibited less uniformity in what appeared to be their response to the treatment, or had he been unable to offer so striking a contrast, as regards mortality, with cases of the same class treated otherwise in previous years. It may be that the author has been the sport of circumstances, and has been merely treating a series of mild or fortunate cases of pneumonia, and only time can show whether this has been so or not. But it seemed to him that it would be no longer jusfiable for him to withhold his experience of the treatment of pneumonia with chloride of calcium from the profession, and he has accordingly placed his cases before the profession, leaving it to them to decide whether they are sufficiently encouraging to justify giving the new treatment an honest trial. His remarks apply only to lobar pneumonia. In the few cases of lobular pneumonia in which he has used it, it did not appear to be of any benefit.

He states that he has carefully avoided hazarding any opinions as to a possible explanation of the action of chloride of calcium in thus modifying the progress of pneumonia. preferring that the profession should judge the treatment rather by the results which he has been able to record; but he feels that his paper would not be complete without the remarks which he has to offer in that direction, and in doing so calls attention to a more recent work in the pathology of pneumonia, and which seems to have a distinct bearing on this explanation. The first of these is the work of the brothers Klemperer, who have been able not only to produce immunity from pneumonia by the subcutaneous or intravenous injection of filtered cultures of the pneumococcus, but have also been able to cure artificially-induced pneumonia by the injection of the serum of an animal which has been so rendered immune. The result was a fall of temperature within twentyfour hours from 40° or 41° C. to normal. They believe that the pneumococcus produces a poisonous albumin (pneumotoxin), which, when introduced into the circulation of an animal, causes elevation of temperature and the subsequent production in the body of a substance (antipneumotoxin) which has the power of neutralizing the poisonous albumin which is formed by the bacteria. In pneumonia there is a constant absorption of the pneumotoxin into the circulation from the lungs. This goes on producing the high fever of pneumonia, until the antipneumotoxin is produced in sufficient quantity to counteract the pneumotoxin, and the result is the crisis and the fall of the temperature to the normal point. They demonstrated that the serum of the blood of patients after the crisis of pneumonia contained this antitoxic substance, and was capable in a fair number of cases of curing the disease when injected into infected animals, and they have even tried it in the human subject with promising results, the temperature falling either permanently or temporarily after the injection of four to six cubic centimetres of serum. The results obtained by Crombie with chloride of calcium very closely resemble those described by the brothers Klemperer. The fall of temperature after its use was too constant to have been accidental, and the author, therefore, refers to other recent work elucidating the intimate nature of the vitality of the blood, and the effect which chloride of calcium has been found to exert on it, taken in connection with the pathological changes which it has been found to undergo in pneumonia.

Crombie refers especially to the work of Green, who discovered that the coagulation of blood-plasma is hastened by the addition of a minute trace of a calcium salt, and that, indeed, calcium is essentially necessary for the formation of a blood-clot; and it was a knowledge of this effect of chloride of calcium—namely, its power of facilitating intravenous blood coagulation under healthy conditions—which made the author cautious in administering it in his first case, for as every physician knows, pneumonia is characterized by an increase of fibrin in the blood, and the liability to the formation of clots in the vessels, at least in the death-struggle. Pekelharing, working on Green's discovery, has found that, among other substances, "peptones" have a strong affinity for calcium salts, and that the toxic action of these substances is due to their removing from the tissues the calcium salts which are essential for the healthy continuation of nearly all the vital processes. They cause at the same time a loss of coagulability of the blood, a fall of blood-pressure, stoppage of secretions, and, if the dose is large enough, death ensues. All these symptoms are prevented if into the vessels of the animal a small amount of chloride of calcium is injected as well as the peptone, and a healthy condition of the blood is thus maintained; and for this healthy state of the blood the presence of a small quantity of chloride of calcium appears to be absolutely necessary.

Now we have, as a constant phenomenon of pneumonia, the presence of peptonuria, and it is not impossible that the action of the chloride of calcium in the treatment of pneumonia may consist in its neutralizing the toxic action of these peptones or albumoses circulating in the blood, if it be not some more intimate action on the blood, the vitality of which we do not as yet know much more than the necessity of the presence of calcium chloride for the existence of the fibrin element. It may be that the pneumotoxin already spoken of has poisonous affinities similar to those of the peptones, and that the calcium salt neutralizes them in a similar way.

# THE INJECTION OF GUAIACOL IN PULMONARY DISEASES.

In a clinic given by Peter he recommended the employment of guaiacol in phthisis, administered by the hypodermic syringe. The formula which has been used by Labadie-Lagrave and others is as follows:

> R Olive oil, 3iv; Guaiacol, 3iss; Iodoform, gr. xv.

Of this mixture 20 to 40 minims are injected daily.

Under its influence the expectoration is decreased, there is a diminution in the fever and sweats, and relief of the bronchial symptoms.

Weill uses much larger quantities than those given in the above formula,—namely:

R. Sterilized olive oil,
 Guaiacol, of each, mvii.
 This is given at each dose.

The formula which has been used by Peter is as follows:

R. Sterilized olive oil, Ziv;
Guaiacol, Zi;
Iodoform, gr. lxxv.
Of this mixture about 30 minims are injected.

Peter cites a case in which an oil embolism accident occurred in the person of a journalist, aged fifty-five years. The patient suffered from debility, cough, and oppression, and the expectoration was abundant and contained bacilli. The injection which was given amounted to 30 to 50 minims a day. After these injections had been continued for some time a congestion of the right lung temporarily interrupted the treatment. About a week later another injection caused intense dyspnæa, marked cyanosis, coma, and death.

At the autopsy there was found a large amount of oil in the blood. Care should, therefore, be taken that the injection is not sent into a blood-vessel. As guaiacol is a volatile substance closely allied to the balsams, it is largely eliminated by the air-passages and produces a local action upon the lung, diminishing the catarrhal processes. Hyperæmia and hæmoptysis, with acute inflammation of the lung, rather contraindicates its employment, but under its influence there is generally an increase in appetite. Guaiacol gives very good results in the treatment of chronic bronchitis, fetid bronchitis, atelectasis, and temporary gangrene, and Peter states that it is preferable to creosote.—Revue de Bibliographie Médicale, February 10, 1893.

#### THE TREATMENT OF OBESITY BY DIET.

In an article in the *Edinburgh Medical Journal* for October, 1892, Dr. Towers-Smith, after detailing a number of cases treated by the method which he usually applies, recommends the following dietaries:

DIET FOR AN EXTREME CASE.

First Period, Fourteen Days.

Breakfast.—Tea or coffee, with saccharin, if desired, in lieu of sugar; bread or biscuits made from soya bean, two ounces; grilled white-fish or red meat, kidneys.

Lunch.—Cut from joint of beef or mutton, taking no fat, and one helping of green vegetables; avoiding only peas, beans, and all roots; soya bread or biscuit, one ounce.

Dinner.—Clear soup, white-fish, red meat, green vegetables as at lunch; soya bread or biscuit, one ounce.

#### DRINK.

First thing on wakening.—Tumbler of hot water with slice of lemon.

II A.M.—Cup of bovril or clear soup.

Lunch.—Two glasses of claret or one ounce of whiskey with potash water.

5 P.M.—Cup of bovril or clear soup.

Dinner.—Two glasses of still hock or claret, or whiskey and potash.

Bedtime.—Cup of bovril or clear soup.

Mustard, pepper, salt, Harvey sauce may be taken.

Additions to No. 1.—Oysters, tongue, stewed fruit with saccharin; poultry, game.

# Third Period, Thirty-one Days.

Additions to No. 2.—Toast in place of soya bread for each meal, two ounces; savory jellies, aspic of prawns, plovers' eggs, jelly.

Dessert.—A small quantity of fruit; blue-mould Dorset cheese.

## No. 1.—Specimen Diet Chart.

This diet sheet is arranged in accordance with usual habits and family history as to obesity, and must be strictly confined to personal use.

Name and address,

180

## Diet Chart for Fourteen Days.

- 7 A.M.—Sip slowly a tumbler of hot water, with lemon-juice.
- 9 A.M., Breakfast.—Two cups of tea or coffee without sugar or milk, taking saccharin if needed; one ounce of soya bread or biscuit; grilled white-fish, steak, chop, kidneys.
- II A.M.—Tumbler of hot bovril or clear soup.
- 1.30 P.M., Lunch.—Cut from joint of beef or mutton, with one helping of either cabbage, spinach, tomatoes, asparagus, French beans, plain lettuce, and water-cress; one ounce of soya bread or biscuit.
- 5 P.M., Afternoon Tea.—Cup of tea à la Russe, or cup of bovril.
- 7.30 P.M., *Dinner*.—Clear soup, white-fish, red meat, vegetables as at lunch; one ounce of sova bread or biscuit.

Bedtime.—Tumbler of hot bovril or clear soup.

- 1. All food should be plainly cooked (grilled for preference); no fat, skin, or rich gravy should be taken.
- 2. Drink claret, still hock, burgundy, Scotch whiskey, and potash water.
- 3. Exercise: A moderate amount of walking should be done daily.
- 4. Condiments: Mushroom catsup, Worcester and anchovy sauce, mustard, pepper, and salt may be taken.

#### PHENOCOLL IN MALARIA.

Phenocoll appears to have been first introduced as a remedy by Von Mering in 1891, who recommended it on account of a supposed antipyretic action, and also as a valuable remedy in rheumatism. Albertoni, in repeating these experiments, was not inclined to have such a high opinion of phenocoll for these purposes. He tried it, however, in two cases of malaria, with such striking results that he recommended a more extensive trial by practitioners dwelling in the notoriously malarial districts of Italy. The matter was taken up, with the result that reports on one hundred and thirty-eight cases in which the drug had been used became available, these including cases of quotidian, tertian, and quartan ague. Nearly all of the first class were rapidly relieved, and the results were also highly satisfactory in the cases of tertian ague. In those of the quartan form the results were not so uniformly successful, but did not compare very unfavorably with those obtainable with quinine.

DR. DALL'. OLIO (Gazz. Degli Ospitali, January 14, 1893), from his own experience with phenocoll, arrives at the following conclusions:

- r. Phenocoll is at least as effective as quinine in cases of malaria.
- 2. As a general antipyretic and analgesic it does not compare at all with the remedies already known, notwithstanding that this is contrary to the opinion of Cohnheim.
- 3. Phenocoll does not give rise to the unpleasant toxic symptoms, such as the ringing in the ears and the cutaneous eruption sometimes produced by quinine.
- 4. Phenocoll will succeed in a certain proportion of cases in which both quinine and Fowler's solution are useless.
- 5. Being a synthetic product, there is no danger of the supply running short, as possibly might happen in the case of quinine.
- 6. The taste of the drug is not so pronounced as that of quinine, and can easily be masked by syrup. It is, therefore, well taken even by children.

#### THE THERAPEUTICS OF OZÆNA.

DR. ARTHUR KUTTNER (Therapeutische Monatshefte, March, 1893) cannot agree with Grünwald when he claims that there is no genuine ozæna. Kuttner has for a long time made a practice in all such cases of searching for bone caries and empyema. However, by far the greater number prove that there is a genuine disease, although its cause has never

been determined. He does not find the name recently brought into use - "rhinitis atrophicans fœtida"—as suitable as the old one, which is just as well understood as cholera and typhoid. Demme reported ten cases treated with the Braune-Laker mucous membrane massage and pyoktanin. In seven of these cases the cure was excellent. systematic and careful use of therapeutics the disease can be masked, even if it is not cured. This is done by a most careful toilet of the nose. Kuttner cites one patient who suffered from ozæna for fifteen years. She was self-willed and would not obey directions, and simply drew salt water into the nose occasion-The crusts gradually disappeared as well ally. as the foul odor, and there has been no return, although five years have elapsed. Nasal washings are liable to develop acute inflammation of the middle ear, and they fall thus into disuse, but are brought into use again, in spite of the danger to the ears. Kuttner has found an apparatus for inhaling steam of great value to him. He adds medication to the water, and has found a solution of soda the best solvent. A cut makes his description of the apparatus quite clear. He has used it for months for many patients, but does not claim to have attained any cure, although he thinks the patients who inhale twice or three times daily are able to keep their pharynx perfectly clean.

### THE ANTISEPTIC TREATMENT OF PER-NICIOUS ANÆMIA.

In the Edinburgh Medical Journal, Dr. G. A. Gibson contributes an interesting article on the treatment of pernicious anæmia by antiseptic medication of the intestine. This treatment is based upon the belief of Hunter that pernicious anæmia is due to excessive hæmolysis. The intestinal antiseptic employed by Gibson was beta-naphthol. He states a number of cases in which the remedy was employed, and in which he believed a septic condition of the intestines existed, in all of which a great increase took place in the number of red blood-corpuscles.

He administers beta-naphthol with some one of the bismuth preparations, preferably the salicylate of bismuth. The dose of beta-naphthol employed by Gibson was 2 grains three times a day, after food. No other change was made in the surroundings, food, or occupation of the patient. If the results obtained by Gibson are obtained by other practitioners, this

method of treatment will become a most im-

### TREATMENT OF PERICARDITIS BY ICE-BAG.

In the British Medical Journal for February 18, 1893, is an abstract of an article by Dr. Leeds on this subject. He draws attention to the serious consequences, through damage to the cardiac muscle, of the formation of adhesions which too often result in pericarditis after apparent recovery: He pointed out that the present treatment of pericarditis was practically nil, or, worse than this, harmful, because very frequently the onset of this disease causes the physician to stop the use of the salicylates.

He has tried the application of the ice-bag over the pericardium in such cases with very good results. In his opinion it subjects the adjacent inflammation, relieves cardiac depression, and actually acts as a true cardiac tonic. Of course it should be used with caution, and the patient should not become chilled. The application is generally favored by the patient.

# THE TREATMENT OF SYMPATHETIC EYE-INFLAMMATIONS.

SCHIRMER (Graefe's Archiv, vol. xxxviii., Part IV., p. 93) contributes an elaborate paper based upon a clinical and pathological study of the pathogenesis of sympathetic eye-affections. The following are his conclusions concerning treatment, which are abstracted in the Ophthalmic Review for March, 1893:

An eye which is blind, and which is in a condition to excite sympathetic inflammation, should be excised without waiting for any sign of sympathetic irritation. If the patient declines excision, as large a piece of the optic nerve as possible should be removed.

No definite rule can be laid down for those cases in which an eye threatens danger to its fellow while it retains some vision itself. The aim must be to estimate the probability of permanent retention of useful sight in the first eye and the amount of danger to the other; but these are questions to which no amount of care and experience can give a certain answer.

If sympathetic inflammation has already broken out, the exciting eye, if blind, should be removed. The removal of the exciting eye has never been proved to have an ill effect on the sympathetic inflammation, but has, on the other hand, appeared in many cases to act.

beneficially in this respect, although the improvement may not be permanent. It is rational to remove the source of the infection, and thereby to obviate the chance of a further migration of germs from the one eye to the other. Moreover, the enucleation cuts short any sympathetic irritation which may be present, and thereby, in all probability, favors the subsidence of the inflammation.

If the sympathetic inflammation breaks out while the exciting eye still retains some vision, the exciting eye must not be excised, for it sometimes happens that the second eye is entirely lost, while the exciting eye recovers more or less, and permanently remains the seeing eye. It may even happen that both eyes may recover useful vision.

The sympathetic inflammation itself appears, according to clinical records, to be best influenced by sweating, mercurial inunction, warm compresses, darkness, atropine, and absolute rest of the eye. Retention of the patient in hospital for several months is the best safeguard against relapse. A sufficiently watchful care can seldom be insured in the patient's own home. Operative interference must be postponed as long as possible, for any operation during the inflammatory period is followed by increased exudation, and even when the inflammation appears to have completely run its course, an operation may light it up again.

### QONSERVATIVE TREATMENT OF STRA-BISMUS CONVERGENS.

DR. S. C. AYRES (American Journal of Ophthalmology, March, 1893) urges that in the treatment of a case of squint the first thing to do is to estimate the error of refraction and then correct it. The patient should be tested every year to see if the glasses are comfortable and satisfactory. In his judgment, except in very high degrees of squint, it is better for the child to wear the correcting lenses for a period of from one to four years before a tenotomy is made, because the primary results of many skilfully-made tenotomies are very satisfactory for a period of five years or longer, but later on a moderate degree, or even a pronounced one, of divergence is not uncommon. He would put glasses on a child as soon as possible after the squint becomes manifest, and has done so in a child only two and a half years old, and frequently in children three and four years old. Referring to children from three to nine years of age, he would make a trial of two to three years with glasses, and if then there was no improvement, would operate. As there is always a slight advancement of the eye after a tenotomy of the internal rectus, he thinks it better in many cases to make a limited tenotomy of both interni.

# OPERATION FOR PTERYGIUM.

An editorial in the Ophthalmic Record for March, 1893, calls attention to the following method of operating: The growth can be removed in any one of the several ways recommended by different surgeons. This done, it is advised to make a vertical incision above and below, each about one-eighth inch long and about one-twelfth inch from the most projecting part of the denuded margin of the cor-The two conjunctival stitches are taken in the usual way for covering the exposed sclera. When these are tied, the parts are brought together without throwing the conjunctiva near the corneal margin into folds. Under these circumstances there is the minimum of danger that any of the conjunctiva will become attached to the cornea before it is covered by epithelium. The corneal part of the pterygium should always be removed by traction; never by dissection.

# FAVORABLE ACTION OF IRIDECTOMY IN ACUTE GLAUCOMA WITH LOSS OF LIGHT PERCEPTION.

RABINOWITCH (abstract in Archives d'Ophthalmologie, January, 1893) describes a case of acute glaucoma in which the patient lost his sight completely. Eight days after the attack the author examined him, and found episcleral injection, diffuse opacity of both corneæ, dilatation of the pupils, ophthalmoscopic examination impossible, and entire absence of light perception. He states that, in spite of the absence of luminous perception, the patient distinguished with his left eye the movement of the hand at a distance of five or six fingerlengths. Double iridectomy was performed, and eight days later the ophthalmoscope revealed a glaucomatous excavation in the left eye and a pallid papilla without excavation in the right eye, the refractive media being perfectly transparent. As far as could be told, light perception was re-established in the left eye on the second day, and on the third day in the right eye. At the end of five weeks after the operation, O. D. V.  $= \frac{18}{80}$ . The visual field was contracted upward, downward, and within, and there was altered color perception, O. S. V.  $= \frac{1}{2}$ . Visual field scarcely contracted.

Normal perception of colors. This state of affairs continued at the last examination made two months after the operation.

### THE TREATMENT OF DIFFERENT OCU-LAR DISEASES BY MEANS OF ELECTRICITY.

Parisotti (abstract in Annales d' Oculistique, February, 1893) thus summarizes the treatment of different ocular diseases by means of electricity:

Faradic Current.—Parisotti has obtained the best results in paralysis of rheumatic origin of the motor muscles. In one case of herpes zoster ophthalmicus the sensibility of the suborbital region was restored after three applications of a faradic current (the fixed pole at the point of exit of the nerve; the movable pole over the insensible area).

Continuous Current.—Good results have been reached (1) in a case of atrophic choroiditis of syphilitic origin. It is to be noted that the condition of the optic nerve was quite good, and for this reason Parisotti attributes the success of the action of the current on the optic nerve rather than on the choroid. The patient, who could no longer read a letter, was enabled to read, although with some difficulty, the print of newspapers. 2. In a case of interstitial trophic lesions of both corneæ with very remarkable hypotony. The author reserves the right to return to this case in another communication. 3. In a case of keratitis, the result of herpes zoster ophthalmicus, which improved after several applications of the continuous current, sensibility returned, and the ulcer was cured. In cases of nicotine amblyopia, even when the patient is in the second or third attack, and the optic papillæ show remarkable discoloration, the continuous current has a most happy effect. The author believes that it is these cases which have misled practitioners into the error that the electric current has a healing action on atrophy of the optic nerve. From what he has been able to observe, it seems to him that the continuous current has no other effect upon real atrophy of the optic nerve than to defer a little the progressive tendency to

*Electrolysis*.—Electrolysis seems to be favorable in the following cases:

- 1. Trachoma.—Parisotti inserts the contact needle, terminating in a very fine point, into the trachoma granules. Several séances are required.
- 2. He has also used electrolysis to hasten the cure of small ulcers of the cornea, espe-

cially transparent ulceration the result of absorption.

- 3. He has removed films from the cornea, the results being obtained only when they were entirely superficial, affecting exclusively, or nearly so, the epithelial layer.
- 4. In trichiasis, the author has, above all, obtained good results. One must use a current of just sufficient intensity (ten to twelve milliampères), and the point of the needle must be very fine. The papilla of the hair-follicle must be cauterized before removing the hair, which then can be plucked out without resistance, the best proof that it no longer retains any adhesions.

#### ELECTRICITY IN OPHTHALMOLOGY.

WILLIAM ELLERY BRIGGS (Occidental Medical Times, April, 1893) gives a résumé of the use of electricity in ophthalmology. With regard to the efficacy of the constant current in the treatment of diseases of the optic nerve and retina, he thinks that, if improperly used, it is an actively injurious agent; for example, when employed in inflammation of these structures, or during the stage preceding atrophy. In beginning atrophic conditions he has observed gratifying results; in late stages neither galvanism nor other treatment seems to have appreciable influence. In cases suited to the use of galvanism a current of from two to three milliampères is advised, passed from the anode on the closed lids, and the cathode either on the nape of the neck or in the subaural region. The sitting should continue five to fifteen minutes daily during a period of two or three months. He thinks that electricity is beneficial in the same class of cases which is improved by strichnine, and recommends it in tobacco amblyopia.

In muscular paralysis either the constant or the interrupted current is recommended. When the faradic current is applied, it may be administered directly over the affected muscle after cocainizing the conjunctiva, while the other pole should be placed in the subaural region or on the nape of the neck.

Electrolysis for removing misplaced cilia is described and recommended. The negative pole of a mild current should be connected with a fine needle and the positive pole attached to a sponge electrode, so that the patient can complete the circuit by touching it with the hand when desired. The needle is inserted in the hair-bulb and the circuit closed for a few seconds. The operator should gauge

the time the electrolytic action should be maintained by the amount of hydrogen generated, by which he can estimate the extent of destruction which has taken place. Electrolysis for setting up plastic inflammation in a chalazion sac is condemned, except in exceptional cases. The application of electrolysis with a view to setting up adhesive inflammation between the retina and subretinal tissues in detachment of the retina is referred to, but the belief expressed that the procedure will not result favorably.

The use of the galvano-cautery in the treatment of infective corneal ulcers is strongly indorsed, and the same procedure as a means of operating for ectropion and entropion of the lower lid is advised. The cautery knife should be brought to a white heat and drawn along the surface of the lid that needs shortening and a few lines from its border. The amount of cauterization must be gauged by the extent of the eversion or inversion to be corrected.

The paper closes with an account of the experiences of the author with the electro-magnet in removing pieces of steel from within the eye, and is illustrative of the advantages of this instrument over any other method of removing fragments of steel under these circumstances.

### SCOPOLAMINUM HYDROCHLORICUM: A NEW MYDRIATIC, AND ITS USE IN OPHTHALMOLOGY.

According to RAEHLMANN (Klinische Monatsblätter f. Augenheilkunde, February, 1893), scopolamin is set forth by A. Schmidt, of Marburg, as an atropoid alkaloid from the roots of the Scopolia atropoides, and, like atropine, hyoscine, etc., belongs to the pharmacological group of the tropeine. As such, the instillation of its watery solution into the conjunctival cul-de-sac causes dilatation of the pupil. According to Landenburg, scopolamin, as well as hyoscine, are contained in hyoscyamus without being identical with the latter. Its chemical combination differs from atropine, hyoscine, etc. It is rather isomeric with cocaine, but naturally yields quite different integral products.

The preparation was given to Raehlmann by Professor Kobert, with the information that, after experiments on the lower animals by internal administration, scopolamin had exhibited an opposite effect to atropine, that its influence on the cortex of the brain was not stimulating, like atropine, but paralyzant. It did not increase the action of the pulse, like atropine, but, on the contrary, retarded its action. These last-named qualities lead to the

expectation a priori that the local special effects of the new remedy would be different, especially those on the conjunctival vessels.

Raehlmann has made use of scopolamin both on the normal and the diseased eye, and reached the conclusion that, as a mydriatic and an antiphlogistic, it surpasses all other tropeines, including atropine. In strength of mydriatic effect it resembles hyoscine closely. The remedy does not produce the disagreeable after-effects and double vision which, according to his experience, occurred from the use of hyoscine, but it possesses all the advantages which belong to hyoscine in comparison with atropine.

During the last half-year he has employed the remedy in all cases in which atropine may be used, and has also used it by way of comparison with atropine, and has found that scopolamin is, in many cases, at least, equal to atropine, while in others it is entirely superior. But the circumstance which will insure scopolamin an enduring place among ophthalmic remedies is that it can be used for a long time in one of the solutions equivalent to the oneper-cent. atropine solution without producing the troublesome associated symptoms which so often make the continued use of atropine impossible. It is well known that atropine disturbs the appetite when used as an instillation for any length of time, either in moderate or large doses. He has never seen this or a similar effect from the use of scopolamin. It is only after very large doses of scopolamin that a feeling of dryness of the throat is produced,a symptom which occurs after very moderate doses of atropine. The state of nervous restlessness, with or without a reddening of the face and quick pulse, which is so often found in patients treated with atropine, never occurs after the use of scopolamin. In cases of incipient atropine-poisoning, or in idiosyncrasy towards atropine, scopolamin, therefore, renders the best service, since it more than supplants atropine in its local effect and completely destroys its general effects.

In several cases of iritis, in episcleritis with infiltrations of the sclerotic, etc., when atropine could not be endured any longer, when the powers of the body were depressed on account of want of appetite, and the general condition was as unfavorable as possible, scopolamin not only produced an improvement in the disease of the eye, but it also maintained the general health. The remedy surpasses atropine in influencing pericorneal injection and pannus, and possesses especial advantages in suppurative inflammations of the anterior section of the eyeball. As is known, under these

circumstances, especially in suppurative keratitis, serpent ulcer, and irido-cyclitis, atropine often is inadvisable, while Raehlmann has found in five cases that scopolamin caused a diminution in the size of an hypopyon. The remedy seems to act more favorably than atropine on the suppurating tissues, probably by an effect on the blood-vessels. Scopolamin does not seem to act on the intraocular pressure; even if there is a pathological increase of the tension, the remedy can be borne. Therefore it is an indispensable drug in inflammatory conditions, especially in iritis, when they occur in glaucomatous eyes. He has used scopolamin with advantage in several cases of chronic inflammation with secondary glaucoma. In one case of absolute glaucoma, with great irritation, strong ciliary injection, and hyphæma, the pain ceased, the eye became quiet, and the blood from the anterior chamber disappeared under the influence of this drug. He has not tried scopolamin in acute glaucoma.

Hydrochlorate of scopolamin operates about five times as powerfully as atropine. It paralyzes, like the latter and in the same degree, the sphincter of the iris and the accommoda-The duration of the effect is (1 per cent. scopolamin compared with 1 per cent. atropine) about the same; perhaps somewhat shorter with scopolamin than with atropine. It is to be used in solutions of one to two pro mille  $(\frac{1}{10}$  to  $\frac{1}{8}$  per cent.), which solutions accordingly correspond in dose to ½- and 1-per-cent. solutions of atropine. Scopolamin operates best when used in divided doses. In a solution of two pro mille ( per cent.) 6 or 7 drops may be administered daily to an adult, or used every fifteen minutes during one and one-half hours. With children correspondingly weaker solutions are to be used.

#### ANTIPYRIN IN OCULAR THERAPEUTICS.

WICHERKIEWICZ (Recueil d'Ophthalmologie, January, 1893; abstract La Semaine Médicale) has successfully used instillations of antipyrin in aqueous solution in about six hundred cases of different ocular affections, such as simple and granular conjunctivitis, dacryocystitis, episcleritis, scleritis, and chronic glaucoma. A solution of antipyrin (2 to 100) instilled into the eye at first causes a smarting sensation, which with more concentrated solutions is changed to a sharp pain. However, the smarting and pain last only a few moments, and soon are replaced by an agreeable sensation, due to the soothing action of the antipyrin, which reduces the congestion. In simple, acute, and chronic

conjunctivitis, and particularly in those forms which follow in the course of influenza. Wicherkiewicz has obtained excellent results from instillations, repeated three times a day, of a weak solution (3 to 5 to 100). The secretion diminishes rapidly, and recovery succeeds in cases which have been unaffected by other means. After the treatment of acute granular conjunctivitis, antipyrin cannot replace nitrate of silver, but it would be very useful against the chronic forms of this affection, instilled three times a day in a solution of 25 to 100. He states that, injected into the lachrymal sac, it exercises a favorable influence upon dacryocystitis, and he has also found it useful in episcleritis and scleritis. Wicherkiewicz has obtained considerable reduction of pain and diminution of the tension of the globe in chronic glaucoma by the following treatment: While the patient's head is bent backward, several drops of an antipyrin solution (25 to 100) are dropped into the nasal canal corresponding with the injured eye twice a day. The drug was not found useful in cases of phlyctenular conjunctivitis, scrofulous keratitis, and blepharitis.

## DERMATOL IN OPHTHALMIC PRACTICE.

Roselli (abstract in *Centralbl. f. Prakt. Augenheilk.*, February, 1893) has used dermatol in 25 cases of pustular conjunctivitis, in 14 of keratitis simplex or phlyctenularis, in 11 of parenchymatous keratitis, in 5 of trachoma and pannus, in 4 of blepharitis, in 3 of hypopyon keratitis with total infiltration of the cornea, and in 2 of croupous conjunctivitis.

He reaches the following conclusions:

- r. Favorable results are reached by the insufflation of dermatol in eyes affected with pustular conjunctivitis of scrofulous origin, whether at the same time preparations of iodine are exhibited internally or not.
- 2. A good result is obtained further in corneal opacities and simple corneal inflammation, but internally preparations of iodine are exhibited, and atropine drops are also used.
- 3. In parenchymatous keratitis the insufflation of dermatol, in conjunction with the instillation of atropine drops and general medication, exhibits good results.
- 4. In corneal ulcers, especially those of traumatic origin, dermatol was useful, also in all cases of hypopyon after emptying the anterior chamber.
- 5. On the other hand, the drug was not valuable in cases of blepharitis.
  - 6. Although it acted favorably upon vascular

pannus and corneal ulcers, no result from it was obtained in trachoma.

7. In two cases of croupous conjunctivitis insufflations of dermatol changed the character of the secretion in so far that it prevented the development of false membrane.

# TREATMENT OF AFFECTIONS OF THE IRIS.

CHAUVEL (Recueil d'Ophthalmologie, January, 1893) continues his studies of various ocular affections and their treatment in military practice. He adopts the ordinary local treatment of iritis, prefers inunctions of mercury to any other method of administering this drug, and thinks that iodide of potassium is useful, combined with mercury, even in the early stages of syphilitic eye-affections. He deprecates the alternate use of myotics and mydriatics for the purpose of tearing loose adhesions.

#### TREATMENT OF TRACHOMA.

DÉBAGORI-MOKRIÉWITCH (abstract in Archives d' Ophthalmologie, January, 1893), in the treatment of trachoma, prefers a concentrated solution of the sulphate of copper to the bluestone itself. One or two drops of the above-mentioned solution are applied to the surface of the everted eyelids. In cases of very pronounced granulations, this author has successfully performed excision of the superficial layers of the follicles, followed by the application of concentrated solution of the sulphate of copper to the everted eyelids the next day. This excision is performed every two days, during the intervals applications of sulphate of copper in drops being made.

THE INFLUENCE OF NASO-PHARYNGEAL
TREATMENT OF VERNAL CONJUNCTIVITIS AND CERTAIN TYPES OF
KERATO-CONJUNCTIVITIS
WHICH ARE ANALOGOUS
TO THIS AFFECTION.

M. TETAN (Paris Thesis, 1892; abstract in Annales d'Oculistique, February, 1893) amplifies the work of Couëtoux, published in the Annales d'Oculistique, December, 1891 (for abstract, see Therapeutic Gazette, vol. xvi. p. 199). The author states at the outset that vernal conjunctivitis is a variety of phlyctenular conjunctivitis. This affection and those analogous to it are related in their etiology with naso-pharyngeal lesions. The best results are obtained when the trouble is limited to the

bulbar conjunctiva, and he insists upon clearing the nasal cavities of pathological matter and, above all, in rendering them antiseptic. In affections related to vernal conjunctivitis, the nasal treatment diminishes in proportion as the lesions attack the cornea, but none the less is very important.

#### DOUCHE OF FINE VAPOR FOR THE EYES.

M. Ceresto (abstract in Annales d'Oculistique, February, 1893) describes an apparatus which allows the eye to be held for a long time under the action of moist heat at a constant temperature. This treatment he has found most efficient in all diseases of the cornea with infiltration.

# THE EMPLOYMENT IN OPHTHALMOLOGY OF MIXTURES OF SEVERAL ALKALOIDS.

M. BERGER (Annales d'Oculistique, February, 1893) recommends mixing several alkaloids in the same collyrium, as one obtains a solution of more active power than when it contains a single alkaloid, and at the same time uses a smaller quantity of each poison. He has employed a mixture composed of equal parts of solutions 1 to 100 of sulphate of atropine, 1 to 100 of sulphate of duboisine, and 1 to 100 of hydrobromate of cocaine. This mixture causes a mydriasis which he has been unable to obtain with any other substance. A mixture of

Sulphate of atropine, Sulphate of duboisine, of each, .3 gramme; Hydrobromate of cocaine, 2 grammes; Distilled water, 100 grammes,

is a mydriatic at least as powerful as atropine in a solution of 1 to 100, without being so poisonous. A mixture of

Sulphate of eserine, I gramme; Hydrobromate of pilocarpine, 2 grammes; Distilled water, 100 grammes,

is a very efficient myotic. A mixture of

Hydrochlorate of cocaine, Hydrochlorate of pilocarpine, of each, 2 grammes; Distilled water, 100 grammes,

gives all of the qualities of the cocaine, with the further advantage that the difficulties of mydriasis and effect upon accommodation observed in the eye when cocaine alone is used do not exist.

#### SOME PRACTICAL POINTS IN THE TREAT-MENT OF GRANULAR LIDS.

G. STERLING RYERSON (Ontario Medical Journal, March, 1893) thinks that in the treatment of granular lids three objects should be kept in view: First, to allay the inflammatory complications and diminish secretion; second, to diminish and remove the conjunctival hypertrophy; and, third, to restore the general health, which is almost invariably impaired. To accomplish the first two objects he uses antiseptics and astringent caustics. When the conjunctival hypertrophy has diminished and the trachomatous process is evident, he uses Knapp's forceps after the instillation of cocaine. Boric acid is then continued, and the conjunctiva lightly painted with a solution of nitrate of silver 30 grains to the In his opinion weaker solutions are not useful. For home treatment he orders a boric-acid lotion, hot, every morning, and the following oxide at night:

R. Hydrarg. oxid. flav., gr. iv;
Zinci oxid., gr. ii;
Thymol, mii;
Camphor, gr. ss;
Cocaine muriat., gr. ii;
Vaseline, 3i.
Rub up thoroughly.

After the acute stages mild astringent washes are best, in his opinion, and he prefers the iodide of zinc (5 grains to the ounce). He thinks it inadvisable to use astringents when the eye is acutely or subacutely inflamed, and then prefers heat and emollients, but deprecates the use of atropine.

# ACUTE MERCURIAL INTOXICATION BY HYPODERMIC INJECTIONS OF THE CYANURET OF MERCURY.

M. Darier (Annales d'Oculistique, February, 1893) contributes his experience to the Society of Ophthalmology of Paris concerning the hypodermic injections of cyanuret of mercury. Convinced as he is of the value of injections of the mercurial salts, he believes in guarding against large doses, especially when the cyanuret is used. He recites three cases. In one there was an idiosyncrasy and violent signs of intoxication; colic, diarrhœa, and vomiting appeared one hour after a single injection of .or centigramme of cyanuret of mercury. In the second case, a girl in whom the dose of the injection had been raised progressively to .o2 centigramme, signs of intoxication demanded diminution of the dose. In a third

case, one of his colleagues attempted to give every day an injection of .or centigramme. At the end of the sixth day signs of intolerance compelled the diminution of the dose. He believes that the quantity of 1 centigramme of cyanuret of mercury is the mean dose which gives the best results, but that one must not apply it at first. He always gives one-half of this amount, and reaches the dose progressively. In the discussion, other cases of violent mercurial poisoning were reported, and it was also pointed out how important it was to obtain a good preparation of the cyanuret of mercury.

#### CATARACT DUE TO ERGOT-POISONING.

KORTNEFF (abstract in Archives d' Ophthalmologie, January, 1893), basing his belief upon observations made during the epidemic of ergotism which raged in the district of Nolinsk during the years 1889 and 1890, considers himself authorized to form the following conclusions:

- 1. Cataract due to poisoning by ergot requires from three months to a year to become ripe.
- 2. The color and consistency of this cataract, among subjects who have attained their thirtieth year, does not differ at all from that of senile cataract.
- 3. Ergotism may produce a bad effect upon the vitreous body, an observation, however, which needs confirmation.
- 4. Discission of the half-liquid raphanic cataract may cause a relapse of the ergotism.
- 5. The fundus oculi in patients attacked by ergotism differs according to each period of the disease; thus, during the violent convulsive attacks, the retina shows a marked pallor, with contraction of the vessels. Sometimes there is a very pronounced hyperæmia of the papilla and the retina, the fundus having a tint of reddish clay.

# REPORT OF ONE HUNDRED CATARACT OPERATIONS.

DR. JOSEPH A. WHITE (Virginia Medical Monthly, December, 1892) reports one hundred operations for the extraction of cataract, and thus discusses the accidents which occurred in this series and their treatment:

Accidents occurred thirteen times, the knife entangled in theiris twice, the lens was dislocated five times, and vitreous was lost six times.

sively to .02 centigramme, signs of intoxication When the knife entangles in the iris, his rule demanded diminution of the dose. In a third is to cut straight through the iris, which will

take off a little piece at the pupillary edge and may cause bleeding in the chamber; beyond this, the accident is of no moment.

Loss of vitreous, while apparently a serious complication, was followed by no bad results in these cases. It is singular that in every one of them the result was among the best, the healing process being uninterrupted. This accident is caused by a too forcible effort to evacuate the lens, or by pressure of the lids and eye-muscles, or by a sudden increase in the eye-tension, which sometimes occurs inexplicably and may rupture the hyaloid. It is unavoidable at times.

Dislocation of the Lens.—When dislocation of the lens occurred, it was extracted with a spoon or hook, as seemed best in each case. This accident may be due to the pressure being made too low on the eye, so as to push the lens up and tilt the lower edge forward instead of backward. The upper edge then tilts back behind the iris instead of through the pupil and into the corneal section; or it may be caused by rupture of the hyaloid, with dislocation, into the vitreous; or the suspensory ligament may be so weak as to give way as soon as the cystotome is applied to the capsule.

In one of his cases, the moment he attempted to rupture the capsule, the ligament gave way everywhere except at the top, the lens in the capsule jumped up behind the iris, and he could not remove it without such manipulation as threatened to empty the eye. He therefore let it alone, and when the wound healed, the lens was hung, as it were, to the roof of the eye behind the iris, the lower edge of the lens showing in the upper half of the pupil. Instead of making any attempt to remove it, he performed a small iridectomy downward and inward, and one year after the lens still hung in this position, and the patient had vision of 28 with the correcting-glasses; but it gradually sagged down, and in November, 1891, he extracted the lens with a hook, with a loss of some vitreous, but a perfect result. His vision to-day is 3%. In one other case, where the lens became dislocated, and the patient was an unruly one, having no control of his eyelids, he let the eye alone until it healed up, and some weeks after removed the lens, with an equally happy result.

Complications happened in Twenty-two Cases.

—Prolapse of the iris occurred both during the operation and during the healing process. Forty-six of the cases were operated on without iridectomy, nearly all of these among the later ones. But prolapse of the iris occurred both in cases with, as well as in cases without, an iridectomy. Sometimes the prolapse takes

place during the operation; it is replaced, and may or may not occur again during the healing process. Usually, however, the prolapse occurs after the eve is closed, and is discovered the first time we examine it to see how it is doing. It may have seemed perfect when dressed,—the iris in place, the lips of the corneal wound in neat coaptation,—and yet we find a prolapse when we open it. How soon or late after the operation this happens we cannot say. What it is due to is equally uncertain. Restlessness of the patient, a slight increase of the tension, an irregular wound in the cornea, or a straight cut through the upper part of the section by turning the edge of the knife outward. may any of them facilitate a prolapse. It is hard to say what causes it, but it is a troublesome and sometimes a dangerous complication when it occurs. The way to remedy it is to cut open the conjunctival covering of the prolapsed portion, grasp it with the iris forceps, pull it out of the wound, and cut it off, as in making an iridectomy. It should not be shaved off with scissors along the line of the incision, certainly not before all irritation has subsided, because this leaves iris tissue still in the wound, and not only retards the healing process, but may cause after-trouble, such as iritis, etc.

Other complications that took place during the healing process were reopening of the wound, iritis, and capsulitis. In no case was there any trouble of the cornea, ciliary body, or vitreous; not a single case of purulent or even fibrinous infiltration of the cornea took place, and this may have been due to the strict antisepsis.

Iridectomy was done fifty-four times; in forty-six cases no iridectomy.

Some time back he always did an *iridectomy*, save in exceptionally favorable cases; now he never does an iridectomy, except in unfavorable cases, as when the iris will not respond to atropine, or there is increased tension, or adhesions to the capsule, or when the cornea wrinkles after the section is made, or when the nucleus is large and the cornea small.

Having had such favorable results in extraction with iridectomy, he was very slow in altering his mode of operating, but is satisfied that, all things being equal, it is better to do without an iridectomy, if possible. Of course the danger of prolapse of the iris is greater, but a judicious use of eserine or, preferably, pilocarpine will usually prevent it. His objection to eserine is that, if not used very carefully, it will set up iritis. With restless patients it is best to do an iridectomy, as the danger of prolapse of the iris is less, and the eye need not be examined for several days.

RESECTION OF THE CÆCUM, GREATER
PART OF THE ASCENDING COLON, AND
FIVE INCHES OF THE ILEUM FOR
MALIGNANT DISEASE OF
THE ASCENDING
COLON.

Lowson (Lancet, No. 3620) resected the cæcum, the greater part of the ascending colon, and five inches of the ileum for malignant disease of the ascending colon. On exposure of the tumor, the ileum and colon were divided and their ends respectively stitched, invaginated, and secured by a continuous Lembert suture, thus making two blind pouches. The continuity of the canal was re-established by means of Senn's bone-plates and lateral approximation. On the third day the patient had a light-colored, liquid motion, and regularly every day thereafter. Convalescence was uninterrupted. A year after the operation the patient was perfectly well.

# THE LIMITATIONS OF CÆSAREAN SECTION.

MURRAY (American Journal of Obstetrics, April, 1893), after a careful discussion of the various methods of procedure in case of such disparity between the size of the living foetus and the passage through which it must pass that natural delivery is impossible, ends his article with the following conclusions in regard to section:

- 1. Cæsarean section should be done always where the conjugata vera is below two and three-quarters inches.
- 2. It should be done in the Roberts or Nagele pelvis with marked deformity, or where there is fixation of one or both sacro-iliac synchondroses from diseases,—cases in which pubiotomy would be ineffective.
- 3. It is the best operation with diameters even larger than two and three-quarters inches, when the child's head is large, and could not probably pass with a living child if pubiotomy were done.
- 4. Where tumors or exostoses are present, the Cæsarean section or Porro operation is the best.
- 5. In cases of cancer of the cervix it should be chosen rather than pubiotomy, and should be done before labor sets in, so that no sepsis results.
- 6. The size of the child's head, in moderate contractions at the superior strait, will oftentimes be the determining factor as to whether an elective Cæsarean section or a pubiotomy be the best operation.

#### EMBRYOTOMY.

EDGAR (American Journal of Obstetrics, April, 1893) states that the indications for embryotomy may be considered under two headings,—namely, those which call for operation in case of a dead fœtus, and those which demand operation in case of a living fœtus. He concludes, after a careful discussion of the subject, that embryotomy is demanded when, the absolute indication for Cæsarean section being absent, the extraction of the fœtus undiminished in size would increase the dangers to the mother.

- a. This indication includes moderate degrees of pelvic contraction, malpresentations, and positions, deformities of the fœtus, and slight obstruction in the soft parts.
- b. In markedly contracted pelvis, with a transverse diameter at the inlet of at least three inches and a small conjugata vera,—under two and five-eighths inches,—embryotomy, in combination, if need be, with pubiotomy (embryo-pubiotomy), other things being equal, will be indicated.
- c. In instances where the conjugata vera is much under two and five-eighths inches, when labor is obstructed by fixed pelvic tumor, extensive exostosis, or advanced cancer of the cervix, coeliotomy is to be preferred whether the foetus be dead or alive.
- d. Where the mother's condition demands rapid delivery, and the absolute indication for Cæsarean section is absent.

Embryotomy upon the living fœtus.

- a. Embryotomy upon the living fœtus is indicated during labor whenever the relative indication exists and the physical signs indicate that the life of the fœtus is practically lost.
- b. In certain rare instances, also, when the condition of the mother is such (temperature, pulse, dangerous thinning of the lower uterine segment), whether from repeated unsuccessful attempts at delivery or prolonged labor, as to render embryotomy by far the safer operation.
  - c. In obstructed labor due to monstrosities.

# INTUSSUSCEPTION SUCCESSFULLY TREATED BY INSUFFLATION OF AIR.

Soulby (Lancet, No. 3630) reports a case of intussusception successfully treated by insufflation of air. The boy, aged five years, had suffered from a slight diarrheea for two days, passing scanty, blood-stained stools. He had colicky pains, vomiting, coated tongue, and sausage-shaped tumor in the right iliac region. The temperature was normal. Tincture of

opium was given; this relieved the pain, but was not followed by any amelioration of other symptoms. The belly became tympanitic, the sausage-shaped tumor increased in size, the general condition was critical. Enemas of warm water were given without avail; air was then continuously pumped in with a Higginson syringe. During this injection the boy towards the close shrieked from pain, and apparently the invaginated bowel was reduced. Shortly afterwards he had free movements, the first containing blood and a little fæcal matter, the second fæcal matter and blood, and the third fæcal matter only. From this time on he rapidly convalesced.

REVIEW OF THE RESULTS OF THE OPER-ATION OF VAGINAL HYSTERECTOMY AND SUPRAVAGINAL AMPUTATION OF THE CERVIX FOR CANCER OF THE UTERUS.

JESSETT (Medical Press and Circular, No. 2809, vol. lv., new series) states that the immediate mortality, after total extirpation of the uterus by Continental surgeons, is reported to have decreased to about 10.5 per cent. as a general average, while certain operators claim to reach a death-rate as low as three or four per cent. The dangers attendant upon vaginal hysterectomy are: Intestinal obstruction from adhesions to the raw surfaces, especially frequent when forceps are used to control hemorrhage; division of the ureter, or its inclusion in the ligature or forceps applied to arrest hemorrhage; the formation of vesico-vaginal or recto-vaginal fistulæ; peritonitis; sepsis and hemorrhage.

In regard to the mortality of the operation, this varies in accordance with the method of calculating the statistics. Thus, Post, in a collection of seven hundred cases, gives a mortality of twenty-four per cent. Martin states that, in so far as the radical cure of the cancer is concerned, of two hundred and fourteen patients operated on by himself and others, only five were living at the end of four years, and, moreover, believes that one hundred women will live a greater aggregate of years if left alone than if subjected to hysterectomy.

Byrne strongly advocates the high operation performed by means of the galvano-cautery, and claims out of four hundred cases not to have lost a single case from operation.

Lewers reports nineteen cases operated on by the cautery, with no deaths.

one death, and fifteen free from the disease at periods varying from one to three years.

Gusserow states that supravaginal amputation by means of the cautery gives a lower mortality than when the knife is used.

### TREATMENT OF GONORRHŒA.

JONATHAN HUTCHINSON (Lanphear's Kansas City Medical Index, March, 1893) gives the following treatment of gonorrhea. His prescription is a partnership of three different remedies, and it is important that they should all be used.

First, an injection of a solution of chloride of zinc (2 grains to the ounce); next. sandalwood-oil capsules; and, lastly, a purgative night dose, with bromide of potassium. The injection is used three or four times a day, the capsules (10 or 20 minims) taken three times a day. The ingredients of the night dose are three drachms of Epsom salts and a halfdrachm of bromide of potassium. It is the action of the last named in preventing congestion of the parts which makes the abortive measures safe.

Moderate purgation and entire abstinence from stimulants are essential. If the case is very acute, and attended by swelling of the corpus spongiosum, tartar emetic or tincture of aconite is well prescribed, but it is very seldom indeed that these are necessary. If the patient be well purged, there is no risk whatever in an abortive treatment from the day he comes under treatment. The risk of orchitis, prostatitis, cystitis, etc., comes in cases which have been allowed to develop rather than in those treated abortively. Hutchinson states that he would as soon think of delaying to use local measures in gonorrhœa as he should in purulent ophthalmia.

## KOLPOCYSTOTOMY IN RELATION TO CHRONIC CYSTITIS IN THE FEMALE.

CROOM (Practitioner, vol. 1., No. 2) calls attention to the fact that few conditions, if any, short of malignant disease are less amenable to treatment than chronic cystitis in the female. He strongly protests against the use of opiates, which, he believes, in place of affording relief, aggravate the patient's distress by interfering with her secretions, disorder her digestion, and render her already distressing condition an absolutely hopeless one.

The treatment of chronic cystitis should be Jessett reports twenty-four cases, with only | purely a local one. The principles upon which such a treatment should be founded are: First, antiseptic treatment of the mucous membrane, and, second, continued rest to the hypertrophied muscular coat. For the first, irrigation with some antiseptic solution will in most cases diminish the amount of pus, mucus, and blood, and improve the condition of the urine. No form of antiseptic is better for this purpose than warm solution of corrosive sublimate (1 in 3000 or 4000). To be of any service, however, the irrigation should be conducted for at least half an hour three times daily. Boric acid is a suitable substitute to alternate with this. In irrigating it is well to distend the bladder each time to the full extent the patient can bear, so as to bring the solution in contact with the whole of the corrugated mucous membrane, as well as to stretch the muscular fibres to their utmost extent. This washing out of the bladder, to be of any use in a case of chronic cystitis, must be persisted in for weeks, and where the kidneys are not involved as a sequel to cystitis, the improvement in the patient's urine and general condition is very marked. The frequency of micturition will probably also be diminished.

Notwithstanding this frequency of micturition, which is, of course, a well-recognized and important factor in cystitis, it is still true that, with the improvement in the mucous membrane, and with the diminution of pus and mucus, the general health of the patient improves pari passu.

For relief of the congested and swollen mucous membrane, free depletion has been found useful by the application of leeches to the anterior vaginal wall. The writer states that this method has been particularly successful in two cases of chronic cystitis of many years' standing.

With regard to the second principle involved in treatment,—namely, rest to the thickened and irritable muscular tissue,—various methods have been suggested. First, dilatation by means of bougies or dilators, of which the best are those of Simon. So far as his experience of this method of treatment is concerned, the author states that he has found it useful and even curative in subacute cases where the paralysis of the sphincter lasts only for a day or two, that short time being sufficient to give the desired relief.

There is one class of cases, however, in which this treatment is not only of no avail whatever, but is absolutely disastrous,—that is, those cases where the disease is tuberculous. In such cases dilatation, even when confined within the limits of safety,—namely, to the size of a forefinger in the adult and of a little

finger in the child,—is apt to produce, and in the writer's experience has invariably produced, permanent incontinence; and this condition more rapidly impairs the health and strength of the patient than the frequent micturition of cystitis. In recent and subacute cases, however, there is no doubt that rapid dilatation of the urethra and temporary rest to the bladder give excellent results.

Croom states that artificial vesico-vaginal fistula has, since its first description, obtained no marked following in England and Europe generally, although in America it has been largely adopted in the treatment of chronic and grave cases of cystitis which are intractable to other remedies.

The results obtained are in the main favorable: nevertheless, it must be confessed there are many cases in which no permanent benefit ensues. A certain number of cases have been recorded in which a perfect cure has been obtained, at least for all functional purposes. Such, for example, is the case described by Bozeman, where, after an unsuccessful attempt to close the fistula at the end of five months, the patient was sent home to the country to recruit her general health, returning at the end of a year greatly improved in appearance; the fistula was then successfully closed. a lapse of nine years her medical attendant reported that she still continued completely cured and able to do a heavy day's work. Voluntary power over the bladder was perfect, and a full collection of urine could take place. As frequently, perhaps, the capacity of the bladder never regains its normal dimensions, although the lining membrane takes on a healthy character.

Even in the cases, however, where a permanent drain is established, the patient generally remarks that her condition is greatly improved, and some patients have preferred the discomfort of an open fistula to enduring the agonies of a returning cystitis after closure.

The author reports four cases which were markedly improved by this operation. In the last case atrophy of the bladder took place, so that its capacity was reduced to almost *nil*, and the ureters, bladder, and urethra were practically one continuous tube.

## TONSILLOTOMY.

MACKENZIE (British Medical Journal, March 25, 1893) reports two hundred and thirty cases of tonsillotomy, the greater number performed on children from six to ten years of age. The

indication in children is usually chronic enlargement, in adults frequently recurring acute attacks of moderately enlarged tonsils; the chronic enlargement of infancy, attended by derangement of respiration, noisy, snoring, and choky respiration, and restless, disturbed sleep, having invariably been present. The general health was always indifferent or bad (aerial starvation); the chest was poorly de-These symptoms, associated with chronic enlargement of the tonsils, were aggravated in many instances by certain concomitants, such as purulent rhinitis, post-nasal catarrh, and adenoid growths and enlargement of the pharyngeal tonsil,—conditions which necessarily required special attention, otherwise the results of tonsillotomy might have proved disappointing. In one hundred and fifty-seven cases both tonsils were removed; in the remainder (seventy-three) one only. The cases of single tonsillotomy were those in which one tonsil only was enlarged, or in which the recurring inflammations habitually commenced in one and the same tonsil. The single tonsil was more frequently the left than the right. It is a curious fact, without explanation so far, that most lesions of the tonsils, and of the larynx also, evince a greater tendency to commence on the left side than the right.

General anæsthesia (chloroform) was induced in nine cases, the ages varying from four to thirteen years. In two of these it was administered to allow of the second tonsil being removed, and in four it was a condition of the operation on the part of relatives. When it is remembered that one hundred and thirty-five patients were under fifteen years of age, it will be admitted that the number requiring general anæsthesia was small. Local applications of ten-per-cent. solutions of cocaine were made in most of the other children.

Profuse or troublesome bleeding never followed the operation. In the case of a man, aged thirty years, from whom a small irritable tonsil had been removed, some oozing of blood, which occurred on the second day, was readily stopped by the local application of a solution of the pernitrate of iron. Instances of persistent hemorrhage after tonsillotomy have been recorded in the medical press in numbers, and the writer states that he knew of a rapidly fatal hemorrhage in the practice of a brother practitioner. He believes, however, that hemorrhage will not occur if care be taken to leave a cleanly-cut surface, and if the faucial pillar or soft palate be not notched in the operation. It seems also that drinking warm fluids soon after the operation favors bleeding. Small

children occasionally vomit blood which has been swallowed immediately after the operation. This vomiting may be deferred for hours, and sometimes causes alarm to the relatives, unless they have been forewarned of the possibility of its occurrence.

In children the local and general results were, without exception, most beneficial, and the younger the child and the larger the tonsils so much the more satisfactory was the aftercondition of the patient. In two cases only (males, aged seven and ten years) the tonsils re-enlarged, the one seven months and the other two years after the operation, and excision had again to be performed. In three adults the tonsillar stumps became inflamed in periods varying from three to fifteen months, and in one instance an acute abscess formed two years after the tonsils had been removed. It is right to remind the reader that in children these results in several instances were not attained by removal of the tonsils alone, but, in addition, by curetting or scraping the nasopharynx and posterior nares, and galvanocauterizing the anterior nares in cases in which obstruction of these regions existed. Such were almost exclusively under ten years of age, with the marked respiratory and other troubles already referred to, and in no single instance was there failure to give marked relief.

The operation did not appear to be quite so successful in regard to the removal of the deafness which occasionally accompanies tonsillar enlargement, though in some instances this was remedied, especially when the operation was supplemented by treatment of the nasopharynx.

### EXCISION OF THE RECTUM AND PART OF THE SIGMOID FLEXURE FOR MALIGNANT DISEASE.

Purcell (Lancet, No. 3631, 1893) operated on a woman suffering from malignant disease of the rectum. The sphincter ani was stretched but left intact; the mucous membrane, one inch inside, was incised all around, as were also the muscular and serous coats, thus freeing the bowel about one inch from the margin of the anus. The rectum was now detached from its surroundings, and the posterior wall of the vagina was dissected off and stripped by means of the finger-nail and scissors. Continuing the blunt dissection upward for five inches, the peritoneum was opened and a straw-colored fluid escaped. Some further attachments of the recto-sigmoid mesocolon were divided, as also

other bands, thus releasing the bowel. The latter was brought down and delivered between the fingers. Two inches above the growth the gut was cut across with scissors. The end was clamped with a fine pair of torsion forceps, the parts were well douched and cleansed, and the vessels ligated. The upper end was then drawn carefully down without any tension and sutured with silkworm-gut sutures to the mucous membrane at the anus. A rubber drainage-tube was lodged behind the bowel, a pad of absorbent wool was secured by a T-bandage, and a morphine suppository administered. The convalescence was uneventful.

The piece removed measured twelve inches. From the anal extremity of the specimen to the lower limit of the disease was a distance of seven inches; the disease occupied three inches, and two inches of sound bowel were resected above.

# RESECTION OF THE INTESTINE AND IMMEDIATE SUTURE IN GAN-GRENOUS HERNIA.

FRANKS (British Medical Journal, No. 1683, 1893) reported the case of a woman, aged thirty, who had an umbilical hernia of three months' duration. It became strangulated on September 22, 1891. Thirty hours and a quarter afterwards herniotomy was performed. abdomen was found to be full of a gelatinous fluid associated with an ovarian tumor. loop of intestine proved to be gangrenous. Nine inches and a quarter were excised, and the ends of the intestine immediately united by means of Gely's suture. The abdominal cavity was closed and a glass drainage-tube inserted, which was removed on the fourth day. The bowels acted regularly after the fifth day, and recovery was complete. Five weeks later the abdomen was again opened and the ovarian multilocular semi-solid cyst was removed. The sutured intestine was inspected. The union was perfect; the line of union could be felt as a thickening in the gut, but could not be detected by the eye. The author discussed (1) the coexistence of ascites with strangulated hernia, and (2) the treatment of gangrenous The various methods of treatment were reviewed, and the following were some of the conclusions formulated: Gangrenous hernia might be treated on one of two principles,either by resection and immediate suture or by the formation of an artificial anus. necessitated a secondary operation for its cure by the use of Dupuytren's enterotome, or by secondary resection and suture. To estimate the relative merits of these two principles of treatment, the death-rate of immediate resection and suture must be compared with the death-rate following the formation of an artificial anus, plus the death-rate of the secondary operation required for its cure. The deathrate in cases of gangrenous hernia treated by the formation of an artificial anus was 80.7 per cent. The death-rate of secondary resection and suture for the cure of artificial anus was thirty-eight per cent. The death-rate following the use of the enterotome was 7.3 per cent. The mortality which attended resection and immediate suture in gangrenous hernia was shown—in a table of two hundred and twenty published cases—to be forty-eight per cent. The author concluded that intestinal resection and suture should be the operation of choice in gangrenous hernia, and that simple enterotomy, followed by the formation of an artificial anus. should be reserved for special cases, and should be considered as an exceptional procedure,

Hutchinson, in discussing this paper, stated that he did not think oblique section was necessary in order to prevent stricture. He is distinctly in favor of performing resection, not at the side of the hernia, but through a second opening in the middle line.

Barker also preferred a median incision, but first removed all the gangrenous and dangerous parts through the hernial wound, temporarily closing the ends of the intestine with ligatures; he then resected them through a median incision. He criticised deductions from statistics on the ground that, in cases where an artificial anus is made, the situation is desperate, enterectomy being performed in the more favorable ones.

Bowlby believed that Franks had taken too rosy a view of the operation. From statistics gathered from the three large London hospitals by Berry over a period of ten years, it appeared that the mortality for all cases of strangulated hernia operated upon was forty-four per cent. Franks's statistics after resection were almost as good. The explanation of this is probably that all the unfavorable cases have not been recorded.

Smith held that the great obstacle to operation was the depressed condition of the patients, as a rule, before operation, making them unsuitable subjects for so prolonged a procedure. He did not approve of the use of Senn's plates.

Beck (*Medical Record*, vol. xliii., No. 14, 1893), in discussing this same subject, reports two successful cases of resection of the intestine for gangrene. Two other cases in which

an artificial anus was formed died, and one perished after simple reduction.

Kocher's claim of a death-rate of only fifteen per cent. after gangrenous hernias is quoted. The author advises against wedge-shaped excision of the mesentery. Rydygier's compressors are used in order to prevent any discharge of excrement during the operation; he prefers the Czerny suture and the single Lembert, using a second row at intervals of half a centimetre. He rejects the use of Senn's plates. Iodoform silk is better than catgut as a sewing material. The abdominal cavity is protected by antiseptic gauze; during operation the hernial ring is dilated as much as possible. The disinfection of the intestine resting outside of the abdomen is performed with a r to 2000 bichloride solution, succeeded by irrigation with sterilized water. He secures the area of intestinal suture to the abdominal ring by two catgut sutures, so as to enable the operator to find it in case symptoms of separation should appear, and the formation of an artificial anus can no longer be avoided. Iodoform wicks are placed in the corners of the wound, and over the final antiseptic dressing, consisting of iodoform gauze, rubber plaster and an ice-bag are applied. Nourishment is administered in the form of beef-tea and wine enemata, exclusively. The first two days the mouth is rinsed sparingly; the following five days hot water in teaspoonful doses is given by the mouth. In favorable cases the peristaltic action of the bowel is retarded by hypodermic injections of morphine.

### A PLEA FOR THE OPERATION OF PARA-CENTESIS ABDOMINIS IN THE TREATMENT OF ASCITES.

FAULKNER (Lancet, No. 3631, 1893) states that a large number of cases of abdominal ascites should be treated as if the presence of the ascitic fluid constituted an actual disease, instead of being treated as though this were an incidental symptom. He holds to this opinion because ascites, no matter from what cause its presence may be excited, is a symptom of a grave and urgent nature, and is usually developed in the more advanced stages of the disease with which it is complicated. Because its presence causes pain and much unnecessary discomfort to the patients. Because any other modes of treatment, such as the administration of purgatives, diaphoretics, diuretics, absorbents, etc., are utterly untrustworthy and greatly add to the exhausted and debilitated condition of the patient. Because the operation of paracentesis abdominis is practically devoid of danger, and can be repeated several times on the same subject with advantage. Because the result of the operation benefits the patient and improves his general health, and thereby tends to augment the chances of curing his actual constitutional disease by subsequent treatment.

He reports twenty-one cases, the majority of them cases of splenic ascites. The indications for the removal of the ascitic fluid were usually dependent upon the additional symptoms caused by the mechanical pressure of the fluid on the thoracic and abdominal viscera.

The most important point in performing paracentesis is to secure the complete evacuation of the bladder immediately before operation. When the ascites is complicated with general ansarca the routine treatment consists in the direct removal of fluid from these regions by making innumerable surface-pricks all over the lower extremities and scrotum. This simple procedure, combined with the elevation of the feet, a suspensory bandage to the scrotum, and complete rest in bed in the recumbent position, gives most satisfactory results.

ELONGATION OF THE LIGAMENTUM PA-TELLÆ TREATED BY TRANSPLAN-TATION OF THE TUBERCLE OF THE TIBIA.

. Walsham (Lancet, No. 3625, 1893) describes two cases of knee-trouble dependent upon elongation of the ligamentum patellæ.

The first occurred in a young patient, twentyone years old. She complained of pain and difficulty in walking, and that she was liable to fall suddenly without warning, from the patella slipping over one or other condyle. The falls were so frequent and unexpected that she was incapacitated for her duties as a housemaid. The patella could be dislocated laterally on either condyle, and with the knee bent at an angle of 90° it could be pushed up over the condyles of the femur, so that its anterior surface looked upward instead of forward. The elongated ligament was shortened by transplanting the tubercle of the tibia about one inch lower down the shaft. The wound healed by first intention, and when the patient was last seen the knee-joint appeared normal and the patella could no longer be dislocated laterally or pushed abnormally upward. The second case was in all respects similar, and was treated in the same manner.

Walsham believes that transplantation of the tubercle of the tibia is to be preferred to the excision of a portion of the ligament and a subsequent union of the cut ends by suture. He recently transplanted the posterior tubercle of the os calcis, with the tendo Achillis attached, for overcoming the elongation of the calf-muscles in paralytic talipes calcaneus.

### A NEW METHOD OF TREATING OBLIQUE FRACTURES OF THE FEMUR WITH-OUT SHORTENING.

KEETLEY (Lancet, No. 3625, 1893) describes an operation for the prevention of shortening and other forms of mal-union after fracture, especially oblique fracture of the long bones. It essentially consisted in the insertion of two pins of steel, thickly plated with silver, one into each fragment of the bone, not too near the fracture. Each pin has an arm at right angles to it. These two arms, lying outside the skin, are lashed together with silver wire after the fracture has been accurately adjusted. No incision is made, each pin being passed in through a simple puncture. The bones are perforated for the pins by means of a long brad-awl.

In one case treated in this way the pins were left in situ for six weeks. The operation should not be resorted to for ten days or a fortnight after fracture. Thus the surgeon will be allowed to see what results ordinary modes of treatment are likely to give, and there will be time for effused blood to be either absorbed or organized.

# THE ABORTIVE TREATMENT OF BUBO BY THE WIELANDER METHOD.

This method consists of an injection of 15 minims of a one-per-cent. solution of the benzoate of mercury into the bubo, followed by compression. Wielander and Letnik succeeded in preventing suppuration in ninety per cent. of the cases treated.

Brousse (Montpellier Méd., 1893, No. 7, p. 133) tried this method in five cases, and succeeded in only one. There is always a more or less marked local reaction, and generally a systemic disturbance, characterized by headache, fever, loss of appetite, and a general feeling of discomfort. Ducamp accounts for this as follows: The mercuric salt diminishes the resistance of the cells, allowing the microbes to increase and secrete more freely their toxic

products, which products, entering into the circulation, cause the systemic disturbances.—
L'Union Médicale, No. 27, 1893.

#### SOME USES OF ICHTHYOL IN GYNÆ-COLOGY.

According to BLANC (Revue de Thérapeutique Médico-Chirurgicale, No. 4, 1893), the most important characteristic of ichthyol is its local action of vaso-motor constriction when applied to a mucous surface. It causes a rapid disappearance of hyperæmia and of the pain due to congestion, and seems to influence the congestions of the tissues underlying the mucous surfaces. For this reason Freund highly recommends its use in chronic metritis, parametritis and perimetritis, in salpingitis, in erosions of the os, and in pruritus of the external genital organs. He uses it externally and internally. Externally he applies a five-per-cent. solution of sulphichthyolate of ammonia in glycerin to the vagina by means of tampons, and rubs into the abdomen an ointment of equal parts of ichthyol and lanolin. He uses capsules containing 1.5 millimetres of ichthyol three times daily, and suppositories containing from 1 to 3 minims.

Unna highly recommends it in acute eczema and seborrhœa, and when there is local congestion of the skin. Weak solutions are more serviceable than strong ones.

Jadassohn has treated a number of cases of gonorrhea with success by irrigations with a solution of ichthyol, a cure taking place in from one to three weeks.

Nils Osn-Gadde has used it internally with good results in chronic alcoholism, chronic gastritis, chronic rheumatism, gout, arthritis deformans (to relieve pain), and sciatica.

Damiens has found that it has properties analogous to cocaine when used hypodermically, and is very useful in neuralgia. He uses a three-per-cent solution. On the other hand, Bouchareff, after many trials, has found it of no value as an internal medication.

## SYPHILIS OF THE LIVER; EXPLORA-TORY LAPAROTOMY; CURE.

PIERRE DELBET (Bulletin de la Société Anatomiques de Paris, lxvii. an., 5me series, tome vi., 1893) reports the case of a child, two years and four months old, with a large tumor of the liver. No diagnosis was made, and an exploratory laparotomy was performed. The sur-

face of the liver was smooth and pale, with rosalate streaks. The subperitoneal glands were large and indurated. The liver was punctured in two or three places, but no fluid was found. The abdomen was then closed. From the third day after the operation the child began to improve, and by the end of two months and a half the liver had decreased to its normal size again. No antisyphilitics were given. Four months after the operation three gummata appeared on the skin, thus establishing the diagnosis of syphilis.

### LEAD-POISONING FROM A BULLET IN THE TIBIA.

E. Kuster and L. Lewin contribute the following case (*Centralblatt für Chirurgie* for February 25, 1893):

The patient, aged forty-eight, clerk, was shot in August, 1870, the ball lodging in the head of the tibia. The wound healed without suppuration. Patient well until January, 1888. when he was subject to severe colicky pains in the epigastrium every two weeks, followed by loss of strength, emaciation, constipation, and slight jaundice. In August the patient was confined to his bed, and shortly after trembling of the hands appeared, and still later a distinct blue line on the gums. Lead was found in the urine, but no albumin. In January, 1889, the head of the tibia was laid open and scraped out. The bone was soft and infiltrated with gray and blue-black spots. bullet was found. The symptoms of leadpoisoning gradually ameliorated, and by the middle of March, 1889, the colics and blue line on gums had disappeared.

#### ALUMNOL IN GONORRHŒA.

Caspar (Berliner Klinische Wochenschrift, March 27, 1893) reports twelve cases of acute gonorrheea in which the treatment consisted of an injection three times daily of a one- to two-per-cent. solution of alumnol; this injection was reduced to once daily as the symptoms disappeared. In eight cases treatment commenced from one to three days after the appearance of the secretions; in four from three to ten days. In seven of the cases a cure was effected at the end of five to six weeks,—i.e., no discharge, and urine entirely free from shreds. In the other five cases the gonorrheea became chronic.

In eight cases of chronic gonorrhea treatment consisted of a one- to two-per-cent. alumnol solution applied by Guyon's method of instillation. One case was cured after four instillations. In the other seven the secretion was the same or more profuse after ten instillations.

In conclusion, he states that acute gonorrhea is neither better nor worse treated by alumnol than by the remedies at present in use, and in chronic gonorrhea it is inferior to nitrate of silver.

From the results in twelve cases of chronic urethritis (no gonococcus present) he concludes that its action on the mucous surface is superficial and inferior to nitrate of silver. But he agrees with Chotzen that the injections of alumnol are entirely painless, and never cause cystitis. The external application of alumnol in gonorrhoeal epididymitis and the injection in gonorrhoeal bubo had little or no effect.

In two cases of chancroid (soft sore) the application of alumnol brought about a speedy cure.

### VAGINAL LIGATION OF A PORTION OF THE BROAD LIGAMENTS FOR UTERINE TUMORS OR HEMORRHAGE.

MARTIN (American Journal of Obstetrics, April, 1893) proposes the procedure heading this extract. He reports in detail two cases in which he employed this method within a month of publication of his paper, with favorable results up to the present time.

The idea of this operation was suggested to him while making an examination of a large bleeding fibroid, in which the uterine arteries were bleeding furiously into the tumor. He believes that a large amount of blood may be shut off from the bleeding masses by throwing a strong ligature around these comparatively superficial blood-channels.

The two principal objections to this operation are, first, that there is such intimate anastomosis between the uterine artery and the spermatic or ovarian artery above that a compensatory supply of blood would soon be derived from that source. The author meets this objection by the fact that the compensatory supply of blood must come from a much smaller artery, deriving its blood in a single channel from a long distance; again, that the nerve-supply to the trunks of the two arteries are comparatively widely separated, hence by the time the nervous mechanism communicates

the fact of uterine anæmia, the abnormal growth is changed in nutrition, atrophy beginning, thus saving blood. Second, inability to ligate the main artery far enough away from the uterus to prevent collateral circulation from branches given off farther back. This objection is met by the fact that the surgeon is able to ligate the trunk of the uterine artery far enough away from the uterus to include its uterine branch; or he can ligate the uterine artery, including en masse the whole base of the broad ligament, shutting off all possibility of anomalous branches, should they exist.

An interesting résumé of the methods of various gynæcologists in ligating the uterine artery follows.

The result Martin aims at is the ligation of more or less of the broad ligament with its vessels and nerves, the extent of the ligation depending upon the ultimate object, from a simple ligation of the base of the ligament, including the uterine arteries and branches of both sides, without opening the peritoneum, to a complete ligation of the ligament of one side, including both uterine and ovarian arteries, with partial ligation of the opposite ligament, without opening the peritoneal cavity, if possible, but doing so, if necessary. Further, checking hemorrhages of the uterus by cutting off blood-channels, and changing the nutrition of the uterus by interfering with its nerve-supply, with the idea of modifying neoplasms which depend upon that organ for their nourishment and growth.

The two patients upon whom this operation has been tried were prepared as for a vaginal hysterectomy. They were put upon a laparotomy diet for two days before operation, and the bowels were thoroughly washed out with enemata. Besides the ordinary general bath and the antiseptic bath on the morning of operation, the external genitals and the vagina were thoroughly cleansed with soapsuds, shaved, and rendered aseptic by douching, etc. After being anæsthetized the patient was placed in the exaggerated lithotomy position, as in vaginal hysterectomy, with an assistant on either side to support the limbs and hold the retractors. A broad, short vaginal retractor, above and below, exposed the cervix, which was transfixed with a strong silk ligature, to be employed in handling the uterus. Before securing this ligature, gauze was packed into the cervix to absorb secretions from the uterus, and the ligature tightened to retain it. The broad ligaments were put to the stretch by pulling the uterus down; this was then drawn to the right side, exposing the left vaginal vault. The mucous membrane of the vagina at the

utero-vaginal fold on the left was then caught with a tenaculum and incised with a pair of curved scissors. One blade was allowed to enter, making a curved incision one and a half to two inches long over the broad ligament and at right angles to it. By means of the indexfingers of both hands the vaginal tissue was separated from the broad ligament, and the latter carefully parted from the bladder for a height of two inches and laterally for nearly the same distance. In this way the dangers of wounding the bladder are avoided, and by pushing the separation laterally the ureter is forced out of reach. The broad ligament was then separated posteriorly to the same height as in front, without penetrating the peritoneum. Passing one finger behind, the other in front, the whole base of the broad ligament, representing two-thirds of its width, was grasped an inch to an inch and a half from the uterus. In this way the throb of the main trunk of the uterine artery and several branches can be plainly felt. A curved pedicle needle, threaded with No. 12 braided silk and guided by the index-finger of the left hand, was passed behind the broad ligament, well up beyond all pulsating vessels. Next, the same finger guiding the point of the instrument, the broad ligament was penetrated. The ligature was drawn through, the needle removed, the broad ligament firmly tied one inch from the uterus, and the ligature was cut short, leaving it well buried in the tissues of the ligament. The opposite side was treated in the same manner, the vagina was well irrigated with bichloride solution, and the vaginal incisions accurately approximated with fine catgut, completely burying the silk. The handling-string in the cervix was removed and the vagina packed with iodoform gauze.

The after-treatment was simple, consisting of the removal of the gauze on the third or fourth day, followed by antiseptic douches. The vaginal wounds cicatrized by the end of the week.

In conclusion, the author believes this operation to be peculiarly adapted to the following conditions:

- r. Acute hemorrhage of the cervix from all acute or chronic causes which cannot be readily controlled by milder methods, as (a) rupture of the cervix in childbirth, from operation or from any other cause; (b) cancer of the cervix.
- 2. Hemorrhage from the body of the uterus as a result of abnormal growths: (a) fibromyoma, (b) sarcoma, (c) carcinoma, (a) intractable hemorrhagic endometritis.

3. For the purpose of changing the nutrition of myofibromatous tumors, so that they will shrink in size and, when of small dimensions, disappear altogether.

# A NEW OPERATION FOR PARALYTIC TALIPES VALGUS.

Parrish (New York Medical Journal, vol. lvi., No. 15) describes an exceedingly ingenious operation for the cure of the deformity and disability incident to paralytic talipes valgus. He calls attention to the fact that heretofore the deformities resulting from complete paralysis of various muscles have been those which have been least amenable to treatment without the continuous use of some mechanical support. They have been the ones which have given the surgeon the most bother and trouble and the patient the least hope of a cure.

Such deformities usually result from anterior poliomyelitis or infantile paralysis. As a rule, a number of the muscles which are thus paralyzed in infancy recover their power more or less completely after a longer or shorter time. In some instances the recovery is complete. The muscles of the lower limbs are those most frequently affected by this disease, the muscles of the leg being more frequently involved than those of the thigh. Of the leg muscles, the anterior and posterior tibials, the muscles of the calf, and the peroneals are, in the order named, the most frequently affected.

In a large majority of cases of talipes valgus, the extensor proprius pollicis is unaffected.

Parrish states that he believes that in not more than two or three per cent. of the cases where the anterior tibial is paralyzed is the extensor longus pollicis also involved. Basing his new operation upon this fact, the idea was suggested that the strong extensor pollicis might be able to bear part or all the burden of its weaker neighbor. Accordingly a series of experiments were performed on the cadaver. The foot was placed in the position of inversion and extension and sewed, the shortened tendon of the first to the lengthened tendon of the lat-First the two tendons were sewed together above the annular ligament, then placing the foot in the position of extreme eversion by pulling upon the belly of the extensor pollicis muscle, when the foot returned from its everted position, the arch was raised, and the great toe was extended. In subsequent, experiments the tendons were sewed together below the annular ligament, the probable functional result being the same. Each time after the extensor pollicis had done the duty of the anterior tibial it

resumed its own function. The operation was performed on one patient. An incision was made extending from the annular ligament three and a half inches upward. Both the tendons were found and isolated. The tendonsheaths were cut away, and the foot was inverted and extended so as to shorten up the tendon of the anterior tibial and pull down the tendon of the extensor pollicis. The opposing tendon surfaces were then freshened with a knife, and sewed together with catgut suture for a space of an inch or more, and the wound was closed. The foot was then moulded into the proper position, and retained there by a plaster-of-Paris bandage, which was worn for a month. Since the operation the child had two more attacks of paralysis, hence the final outcome of the case cannot yet be recorded.

In some cases a better result can be obtained by cutting off the tendon of the extensor pollicis and sewing it on to the common extensor of the toes, and then cutting the anterior tibial tendon and uniting the proximal end of the extensor pollicis to the distal end of the anterior tibial, thereby allowing the extensor pollicis only the function of the anterior tibial muscle. In cases where the posterior tibial is also paralyzed it may be necessary to sew its tendon fast to the tendo Achillis. The important principle of grafting tendons and having a live muscle to do the work of a dead one is that which the author particularly wishes to establish.

If in any case the deformity is not readily reducible, it should be made so before any operation is done upon the tendons. This is the cardinal point in reaching successful results.

# ACTINO-MYCOSIS CURED BY IODIDE OF POTASSIUM.

MEUNIER (Revue Médico-Chirurgicale, 60 année, No. 7, 1893) observed a case of actinomycosis, the disease appearing in the form of a dense phlegmon, attacking the cervical region. Before ascertaining the true nature of the tumor, iodide of potassium was administered, 25 grains a day. The result of this treatment was cure of the patient, so that Meunier agrees with Thomassen in the belief that the iodide is a specific against this disease.

## THE CURATIVE AND PREVENTIVE AC-TION OF MERCURY AND IODIDE OF POTASSIUM.

MAURIAC (Journal de Médecine et de Chirurgie Pratique, tome xliv., 64 année, 4 series) holds that the two drugs most powerful in the treatment of syphilis do not realize the conditions essential to entitle them to be named as specifics, though they are incontestably superior to all other remedies which have been employed against syphilis.

Their curative action is often wonderful, and can usually be implicitly relied upon when the drugs are given in accordance with the recognized clinical manifestations of the disease. their preventive action, however, they are less satisfactory. This action is feeble, superficial, and transitory, since the outbreaks of the disease seem to be prevented not at all by the prophylactic treatment. There is only one condition under which this preventive action has proven satisfactory,—that is, when administration of the specifics prevents hereditary transmission of the disease from the husband or wife free from apparent manifestations. Daily experience demonstrates that mercury neutralizes the latent infection of the spermatozoa, of the sperm, the ovule, and the blood which occasions hereditary syphilis. This, again, however, seems to be transitory, since after treatment and apparent cure hereditary transmission may appear latent and the parents themselves may be attacked by recurrences. It cannot be doubted that there is a tendency towards spontaneous cure in syphilis. Since well-directed treatment cannot injure the system, since it powerfully aids this tendency to spontaneous cure, the disease should never be abandoned to its spontaneous evolution. Whatever be the degree, form, tendency, or age of syphilis, it should always receive specific treatment. This is especially so when the disease is in its active state; medication should be directed not only against manifestations of the disease, but against the diathesis. Under these circumstances (the absence of symptoms) medication must be conducted somewhat by guesswork. Admitting that the syphilitic diathesis may be present, and admitting the value of the administration of specifics against this diathesis, the logical deduction would be to administer specifics during the entire period of life after syphilis is once acquired. This, however, is an unnecessary extreme, abandoned by its one-time most enthusiastic advocates.

Mauriac believes that the best preventive results from the specifics are to be obtained by pushing their curative action as far as possible each time manifestations appear. The indications under these circumstances are clear and direct, and the dosing should always be full. In the intervals, when no external signs of syphilis are to be found, the mercury can be suspended until new developments require its

administration. Mauriac believes that during the periods of latency the administration of a specific is without good effect, excepting as a means of preventing hereditary syphilis. Here mercury is incontestably the strongest guarantee against the chance of transmission of the disease.

### INJECTIONS OF SUBLIMATE IN PURU-LENT ARTHRITIS.

RENDU (Revue Médico-Chirurgicale, 60 année, No. 7) reports a case of purulent arthritis cured by injections of sublimate; the patient a woman suffering from acute arthritis, with grave concomitant symptoms for fifteen days. There had been a preceding osteomyelitis, and the patient was also suffering from leucorrhœa. The leg was splinted for two days, after which half a pint of pus was aspirated from the joint. Careful examination showed that there were no fungosities. A small quantity of corrosive sublimate (4 to 1000) was injected into the joint. The same evening the temperature became normal and the general symptoms greatly improved, but the effusion of the joint became more marked and required removal by aspiration eight days later. The aspirator now drew off pure serum. There was no further evacuation, and the cure was complete. Microscopic examination failed to show the presence of micro-organisms, but cultures upon blood-serum revealed the presence of a microbe identical with the gonococcus.

# STRICTURE OF THE URETHRA IN WOMEN.

GLENOWVILLE (Revue Médico-Chirurgicale, 60 année, No. 7), after calling attention to the extreme rarity of clinical observations on stricture of the urethra in women, states that the first point in treatment is the exclusion of the presence of tumors obstructing the urethra by press-Next the presence of cystitis and calculus must be eliminated. Both are much more commonly causes of frequent micturition, pain, dribbling, etc., than stricture. Bulbous bougies are used for exploration, and usually the narrowing is found in the anterior third of theurethra, near the meatus. In some cases the vaginal touch will show a cicatricial hardening about the seat of stricture. Gradual dilatation is the best treatment, although in some cases internal urethrotomy will be required.

# TRAUMATIC TETANUS CURED BY AMPUTATION.

CHAUVEL (La Tribune Médicale, 2 series, No. 13) reports a case of traumatic tetanus cured by amputation. A soldier occupied in

the care of horses fell on the ground, and suffered as a result luxation of the second phalanx of the first, together with a contused wound; the injury was cleansed and dressed antiseptically, and appeared entirely cicatrized, when, on the tenth day following the accident, characteristic symptoms of tetanus developed,—i.e., stiffness of the arm, trismus, opisthotonos, and The finger was amputated at once, and full doses of chloral and morphine were administered. The patient recovered. An examination of the ground on which the soldier had fallen, likewise the serum escaping from his wound, showed the presence of tetanus bacilli. Inoculations in animals were equally successful, and urine passed by the patient during the height of his disease produced tetanus in guinea-The amputated finger was examined. pigs. Beneath the apparently healthy cicatrix was found pus and gravel, in both of which tetanus bacilli were found.

Feraton ascribed the cure absolutely to amputation, and proves himself sceptical as to the value of medical treatment. He holds that in such cases the micro-organisms remain localized, to an extent at least, and where this operation does not immediately endanger life, it should be performed at once upon the first symptoms.

Delorme advises as an apppropriate treatment for tetanus vigorous curetting of the wound when amputation is impossible. Thus he was able to save one case of tetanus resulting from the penetration of a splinter of wood into the thigh.

# THE REMOTE RESULTS OF LAPAROTOMY PRACTISED FOR THE CURE OF LOCAL PERITONITIS.

Pick (L'Union Médicale, 47 année, No. 36, March, 1893), after having collected one hundred and thirty cases of tubercular peritonitis treated by laparotomy, previous to 1890, states that intervention is useless in acute miliary peritonitis. In the dry ulcerative form of the disease no crusts are reported; in the suppurative ulcerative form nearly forty-three per cent. are cured; in the dry fibrous form over seventy-one per cent. are cured; in the generalized ascitic form over seventy-three per cent. are cured; in the encysted ascitic form over ninety per cent. are cured.

Beaussenat examined five of the cases found in Pick's tables several years after the operation was performed, and in all found that cure was permanent. In one of these cases, a young girl of eighteen, operated on in October, 1890, the abdominal cavity contained over three quarts of liquid and many granulating foci, varying in size from a millet-seed to that of a finger-nail, bright red in color, projecting, and surrounded by an inflammatory aureola. A fragment of the peritoneum was inoculated on a guinea-pig, and the latter died of the typical symptoms of inoculation with tuberculosis. Two years later the patient presented herself quite cured of her tubercular trouble and suffering from a hernia, for which radical treatment was advised. On opening the abdominal cavity, neither effusions, adhesions, nor tubercular granulations were found. A fragment of the peritoneum inoculated upon a guinea-pig produced no results. There is now produced, as a result of operation, an extremely vascular inflammatory exudate, which, covering the inflammatory areas as a pseudo-membrane, retracts and occasions sclerosis of the tuberculous parts.

Beaussenat admits that in cases of generalized fibrous ascites laparotomy gives in the adult about seventy-two per cent. of cures, among which about fifty-three per cent. will probably be durable.

There are three contraindications to intervention,—high fever, extensive or rapid pulmonary or pleural tuberculosis, and tubercular enteritis. The abdominal incision is an essential element in obtaining curative results. Drainage should not be employed.

# THE TREATMENT OF GONORRHOEA WITH CHLORIDE AND IODIDE OF ZINC INJECTION.

GLENN (Journal of Cutaneous and Genito-Urinary Diseases, vol. xi., No. 127) reports twenty-four cases treated by an injection made up of chloride of zinc half a grain, iodide of zinc one grain, water one ounce. The discharge from all these cases was examined and the presence of gonococci demonstrated. length of time that elapsed from the beginning of treatment until all evidence of the disease had disappeared, and after which no relapse occurred, was as follows: Two in three days, one in four days, two in five days, three in seven days, one in eight days, one in nine days, one in ten days, one in twelve days, one in thirteen days, two in fifteen days, two in seventeen days. one in eighteen days, two in forty days, one in fifty-five days.

The average length of time required for a cure was sixteen and seven-twenty-fourths days.

In the case that required thirty-six days, there was no pain nor inconvenience for the last twenty-five days. There was a drop of whitish discharge in the morning and about two o'clock in the afternoon, but at no other time. The patient only urinated on rising and at bedtime.

In one case that required forty days, the patient had been suffering for three weeks and had just recovered from gonorrhea orchitis when first seen. A considerable portion of the time elapsed before the zinc injection was begun, which had to be suspended one week during a second attack of orchitis, the actual use of the injection being only about twenty days. In the other case requiring forty days, the patient was apparently well on the twelfth day, but had sexual intercourse that night, which set up considerable inflammation, requiring twentyeight days longer to completely remove it. The case requiring fifty-five days had naturally a very small urethra, which would admit no larger instrument at any point than a No. 11 American Scale. Irrigation was practised three times and nitrate of silver (five-per-cent. solution) applied to deep urethra before patient recovered.

Of course, in many cases injecting in the ordinary way by the patient will not be sufficient, but in the great majority of cases even this method will afford a more speedy relief than any other treatment; and in the small per cent. of cases that are difficult to cure (requiring thirty or forty days), there is seldom anything to annoy the patient after the first five or ten days, save a slight discharge. The frequent micturition, ardor urinæ, and excessive discharge yielded very rapidly. If injecting in the ordinary manner does not cause rapid improvement, the urethra should be thoroughly irrigated with hot water and then with the zinc injection once in twenty-four hours.

SOME MISTAKES IN THE USE OF INTRA-VESICAL INJECTIONS IN THE TREAT-MENT OF THE CYSTITES OF PROSTATICS.

ALEXANDER (Journal of Cutaneous and Genito-Urinary Diseases, vol. xi. No, 127) states that in an inflamed bladder sensibility is increased both as to tension and to contact. Wherever there is a hyperæmia or a congestion of the bladder-wall, an injection beyond its capacity causes a painful and violent desire to pass water. The intravesical injections may do harm by increasing local congestion of the parts. An injection which causes pain or produces a desire to pass water, by distending the bladder

increases the inflammation, and this is especially true when the injections are repeated frequently. Hence it may be stated as a general principle that in any of the cystites where the tension sensibility of the bladder is very acute and the capacity of the bladder greatly diminished, intravesical injections are absolutely contraindicated. Although the normal bladder has little contact sensibility, its reaction to irritating fluids is very marked, and is intensified in nearly all cases of cystitis; strong injections, therefore, such as the bichloride of mercury solution, may increase the inflammation by causing congestion. The vesical spasm, which sometimes remains after injection, should be regarded as a contraindication. The use of soothing injections, and of those intended to produce a local anæsthesia of the bladder, though general, is based, however, on a false idea of physiology. The drugs commonly employed are cocaine and opium in some of its forms. Under no circumstances should such injections be used in the cystites of prostatics as a mode of treatment, for the pain in these cases is not due to the contact of the urine, but to an increase in the tension sensibility of the bladder, and the same is true in regard to micturition. To anæsthetize the inner surface of the bladder, therefore, has no effect upon the pain or frequency.

The treatment par excellence for ammoniacal decomposition is the dilution of the urine. The ingestion of large quantities of fluids is indicated in these cases; the internal administration of antiseptics, such as naphthalin and the oil of wintergreen, is also recommended. Pus in the urine will also occasion incontinence if the entrance of microbes into the bladder is prevented, or irrigation of the urethra and simple evacuation.

Taylor agreed with Alexander that the habitual use of cocaine in the treatment of the bladder is highly injurious, and called attention to the fact that even though copious injections seem to irritate, much good could be accomplished by employing only small quantities of antiseptic solution.

#### TREATMENT OF VARICOSE VEINS.

Sweetnam (Canadian Practitioner, vol. xviii., No. 4) contributes an extremely practical article upon this subject. Among the other and commonly recognized causes of this affection, he calls attention to walking heavily upon the heel as an important factor in dilating

veins. The centrifugal impetus acquired by the blood during the early portion of the step, when the heel is brought abruptly upon the ground, is thrown upon the valves and then upon the vein-walls.

In systematically taking up the surgical treatment, he first considers the subject of bandages, and prefers to all others cotton or flannel cut upon the bias. Stockings are also extremely serviceable, especially in the working-classes. These should be made of stout linen, laced down the front; the two edges are provided with eyelets, and one edge with a loose flap, which, passing behind the lacing, protects the skin from what might be a source of considerable irritation. If the varicosity extend above the knee, a small piece of the linen is cut out of that portion of the stocking which would correspond to the anterior portion of that joint. The thigh-piece of this stocking may take its support from an abdominal belt, or a waist, worn for the purpose. The front should be closed with three or four different pairs of laces, so that the pressure at any given point may be altered without interfering with the remainder of the stocking. A thigh-piece of real value is made of stout merino, in the form of a tightly-fitting belt.

Strapping is of service when the varicosity is confined to a small portion of a single vein or to a circumscribed bunch. These strips are applied at right angles to the greater diameter of the bunch, and are removed at night. They prevent distention and relieve pain.

Massage is particularly serviceable in cedematous cases, and where pain is so severe that exercise is not possible.

The radical treatment aims at the obliteration and removal of the altered veins. This is accomplished either by subcutaneous ligature or by excision. The ligatures are introduced as follows: The selected vein with its surrounding skin is picked up between the thumb and forefinger, and the needle (armed with a ligature) introduced through the skin on one side. The eye of the needle is then opened and the ligature detached; the eye is closed again and the needle withdrawn. We have now a ligature passing from the point of entrance to the point of exit under the vein. The needle is now reintroduced (unarmed) into the same opening produced by the former puncture, and made to pass above the vein,—that is, between the vein and integument,-making exit at the point of exit produced by the first puncture. The eye is now opened, the ligature introduced into it, the eye closed, and the needle withdrawn. We now have the ligature around the vein, and both ends making exit from the same opening. All that remains to be done is to tie with a friction-knot,—one made by passing the end twice round the loop instead of once, and not liable to slip.

Trendelenburg, of Bonn, has recently urged ligature of the trunk of the saphenous vein for the purpose of reducing varices of the leg and healing varicose ulcers; but past experiences have made us sceptical of the permanent value of limited excision and partial operations generally.

Excision is, however, the best treatment in the cases calling for radical treatment. operation is conducted as follows: The day before the operation the patient, placed in a sunlit room, is asked to stand upon a chair or table, and the saphenous vein, with all its enlarged branches, is traced through its entire course with a camel's-hair brush, moistened with a 20-grain solution of nitrate of silver in spirits of ether nitras. A few minutes' exposure to the sun will so fix it that any washing that is done preparatory to the operation will not render it much less distinct. The vessel in this way may be exposed throughout its entire course in less than five minutes with a degree of accuracy and ease not possible in any other way.

The limb is cleansed with ether and soap, and for some time before the operation packed in a wet carbolic dressing. The patient being etherized, the limb is rendered bloodless, and a tourniquet applied above the upper limit of ' the incision; the limb is again washed, a short incision is made some little distance above the length to be removed, and the vein divided here between two ligatures. In this way the proximal end of the vein is protected against any possible infection which might find its way into the larger wound. So far this precaution has never been necessary, none of the cases having been infected. A rapid incision is now carried over the entire length of the vein to be excised and down to it.

The skin-flaps being well turned back to enable one to follow the altered branches through the fascia and into the muscle, if needs be, are fastened with a few stitches, and the piece of vein to be removed is divided at its upper end. The dissection proper is then commenced, and this is the tedious part of the operation. The major portion of the work may be done with the back of the knife or a fine periosteal elevator, the branches encountered traced out beyond all appearance of disease, and tied off with strings or catgut (preferably that boiled in alcohol under pressure). Unless considerable care be exercised many of the smaller

branches will be torn, and some troublesome bleeding may result. The dissection having been completed and the veins removed, the tourniquet is slightly and cautiously relaxed and the bleeding points secured. This is best done by torsion with fine pressure forceps which include little more than the vessel in their bite, and are therefore less likely to produce destruction of the already somewhat devitalized tissue than one of a coarser pattern.

Before withdrawing the tourniquet a number of deep sutures should be inserted, passing under the wound and not appearing in it. These are not tied until the wound is being closed, but would effectively control hemorrhage from any branches which might have escaped the catgut ligature, and, drawn moderately tight, give the wound good support while healing. The superficial sutures are of stearin, sterilized silk, interrupted, and placed at the greatest distance compatible with perfect coaptation. The wound having been covered with a moist boracic-acid dressing, protected by gutta-percha tissue, the limb is placed upon a pillow, the sutures removed upon the seventh day, and the patient kept in bed for two weeks longer, and compelled to wear a flannel bandage for at least six months, to be removed upon the slightest indication of varicosity in any of the remaining vessels.

## THE TREATMENT OF NON-MEMBRANOUS STENOSIS OF THE LARYNX IN THE ADULT BY O'DWYER'S METHOD OF INTUBATION.

SIMPSON (Medical Record, vol. xliii., No. 15) reports five cases of laryngeal stenosis successfully treated by means of intubation. In the first case the trouble is probably due to a stenosis due to a species of condylomatous growth of specific origin. The tube is introduced when dyspnœic symptoms become urgent. Under specific treatment the patient's condition rapidly improved. Recovery followed.

The second patient was in danger of suffocation from inflammatory swelling consequent on tuberculous ulceration. The tube was left in for six days, but was not well borne, producing cough, irritation, and some pain, with great distress on attempts at deglutition. Nevertheless, great comfort was experienced by the relief of suffocative symptoms. After removal of the tube there was ample room for breathing. The iodide of potassium in full doses brought about a cure. Twice again in the three succeeding years intubation was practised on this

patient, each time with satisfactory results. The particular good effects of this method of procedure were apparent from the intralaryngeal pressure of the tube, which secured permanent separation of the infiltrated and movable cords. It is also probably a syphilitic case, although at first it closely simulated tuberculosis.

The third case was also one of syphilitic stenosis.

The fourth was one of bilateral paralysis of abduction, and the fifth one of stenosis following fracture of the larynx.

Simpson states that for general convenience a set of three tubes of various sizes will be found sufficient; the introducing and extracting instruments should be heavier and stouter than those used with the croup-tubes, in order to gain more force in passing the different strict-The operation is liable to be difficult when the epiglottis cannot be easily controlled and an extra amount of force is to be exerted. Under such circumstances, though the entrance to the stricture is very small, or situated away from the median line, this increasing difficulty of inserting the tube, it may be well to try its introduction by the aid of a laryngeal mirror; but as soon as the tube enters the stricture the mirror must be dropped quickly and the forefinger of the mirror-hand transferred to the head of the tube to exert the proper pressure, and to hold it in place while the introducing instrument is being withdrawn. It is well to use medicated steam inhalations in order to prevent drying of secretions in the tube. Patients differ with respect to the amount of irritation produced by the tube; but, as a rule, it becomes better tolerated day by day. The difficulty in deglutition is the most troublesome feature to overcome. This may in a measure be effected by having the patient swallow while lying down, with the head lower than the rest of the body, or by leaning over a chair, or resorting to an œsophageal tube or rectal enemata. Removal of the tube is accomplished preferably by the aid of a laryngeal mirror.

#### VAGINOD YNIA.

FROST (Medical Record, vol. xliii., No. 14), under this title, describes an affection which he considers as distinct from vaginismus, the latter implying only muscular contraction at introitus, while the former is applied to contraction along the whole vaginal canal. The clinical history of vaginodynia is that of a sudden attack of neuralgic pain throughout the female reproductive organs, without apparent adequate cause,—

an attack so severe, and with sharp lancinating pains so intense, that the physician is summoned as to an emergency. After a duration of several hours the pains gradually subside. Physical examination shows the abdominal muscles tense, and on examination of the vagina the introitus is found tightly contracted. Instead of classifying the case as one of vaginismus, and proceeding no further than this examination, it is well in these cases to press the finger backward with considerable force against the sphincter, introduce the finger farther in, progressing backward more and more powerfully; then, as soon as it is possible to do this, avoiding the cervix uteri as well as the anterior vaginal wall by drawing the whole pelvic floor backward. The pressure on the pelvic floor adds nothing to the pain, and the moment the latter is retracted, using the two fingers as a hook, the suffering ceases completely. pressure is relaxed, the pelvic floor again contracts, and again a severe pain is experienced. Examination of the surroundings will show that it, too, is rigidly contracted.

The treatment has for its object relaxation of the perineal spasm. This is accomplished by introducing the fingers into the vagina, as already described; then, with the thumb, press externally against the lower end of the sacrum, and, acting as a fulcrum, stretching to its ut-This is to be most extent the vaginal canal. held stretched for ten or twenty minutes, or until the perineal muscles are sufficiently tired out to prevent their contracting action. relief of the patient is instantaneous. Other periodic attacks will certainly follow, but may be relieved in the same way. Such treatment causes, after but a few applications, an entire cessation of the recurrences of the spasms. Among the drugs in the interval fluid extract of quinine and fluid extract of belladonna are most serviceable.

#### Reviews.

An Introduction to Diseases of the Skin. By P. H. Pye-Smith, M.D., F.R.S. Philadelphia: Lea Brothers & Co., 1893.

This book by Dr. Pye-Smith, who is well known to the profession in England and America as a skilful physician and dermatologist, is a reprint, with some variations and additions, of the chapters dealing with diseases of the skin which he wrote in 1886 to complete the

unfinished work on medicine by Dr. Hilton Fagge.

While the book is, therefore, to some extent a compilation from other contributions which Pye-Smith has made to medical literature, it possesses certain advantages in the way of brevity and concise statement which will make it of value to those practitioners who in a brief space of time wish to inform themselves concerning the more recent views of dermatologists.

A very useful feature of the work is the introduction of diagrams of the human body, showing, by means of colors, the areas involved by certain skin-diseases. The book contains three hundred and ninety-two pages small octavo, is well bound, and is, as we have said, a credit to its distinguished author.

ELEMENTS OF HUMAN PHYSIOLOGY. By E. H. Starling, M.D., M.R.C.P. Illustrated.
Philadelphia: P. Blakiston, Son & Co., 1892.

Although this book bears the imprint of 1892, it has only just been received by the reviewer. While there are many points in it which are of value to the student, the book can scarcely hope to take a prominent place among the medical text-books used either in this country or abroad. It deals with the province of physiology in a somewhat different way from most of the other manuals, is much too brief for the ordinary medical student, and it is too deep for its useful employment in non-medical schools where it is the desire of the instructors that the pupils should have some knowledge of the human body.

Dr. Starling's book would be a useful purchase to accompany other works which do not contain descriptions of certain functions which he has rendered clear by lucid statement.

THE MEDICAL ANNUAL AND PRACTITIONER'S INDEX:
A WORK OF REFERENCE FOR MEDICAL PRACTITIONERS. 1893. Eleventh year.

Bristol: John Wright & Co.

London: Simpkin, Marshall, Hamilton, Kent & Co. New York: E. B. Treat.

The Medical Annual for 1893 opens with an article on the present status of therapeutics by Dr. H. A. Hare, the purpose of which, to quote the language of the writer, is to present a summary of how we stand in regard to the advantages which may be derived from the application of remedial measures to the cure of disease. It is a judicial review by one who has added much to our knowledge of the physiological action of new remedies and their

therapeutic value, and is worthy of careful consideration.

Part II. of the Annual comprises the major portion of the book, and contains the new treatment in medicine and surgery for the past year. The literature of medicine has been carefully culled, and the most important advances in general and special surgery and medicine are comprised within the five hundred pages which compose this section, many of which are freely illustrated, not only with wood-cuts, but with some excellent chromolithographs.

Part III. is devoted to sanitary science, new inventions, improvements in pharmacy, and dietetic preparations, and, like the preceding pages, contains many illustrations, chiefly cuts of new instruments.

A book which has reached its eleventh year does not need an introduction. It is a pleasure to commend it, because it contains a reasonable complete report of the progress of medical science.

HYDROTHERAPY AT SARATOGA. By J. A. Irwin. New York: Cassell Publishing Company, 1893.

This small octavo volume of two hundred and seventy pages, including the index, gives information concerning the value of Saratoga as a health resort, particularly in relation to its mineral waters. It is clearly written, the type is large, and the book well printed. The value of brief hand-books of this character, which describe the usefulness of our native mineral waters, cannot be overestimated. Unfortunately, many of American physicians know more about the value of foreign springs than of those which are scattered through the United States. We commend the book to those who wish for information upon this interesting and practical subject.

#### Correspondence.

THE EMPIRICAL USE OF COUNTER-IRRITANTS.

To the Editors of the THERAPEUTIC GAZETTE:

DEAR SIRS:—A short time since I received from a well-known firm a reprint of an article by Drs. A. H. and Frederic Laidlaw, entitled "Mustard in Therapeutics." While the article had an "advertistic" tinge, it called to mind that which I have noticed so frequently,—viz.,

the use of counter-irritants,—with altogether an erroneous idea as to how the benefit is to be derived. In speaking of where to apply these mustard-leaves, they say, "The popular rule—'put the plaster where you feel the pain'—is generally wrong, for when we irritate a spot on the skin we not only have a response from the parts which lie beneath, but the whole bulk of the blood in the body sets towards that point with the steady trend of an ocean current. This fact should always be remembered in applying counter-irritants." This reminds me of some lessons given to me two years ago.

I was called in consultation to a neighboring village to see a man with congestive chill. The attending physician, a man in middle life, had treated the case very satisfactorily, and when I arrived the chill had passed off. Upon examination I found a large mustard-plaster over the abdomen, and smaller ones, about two inches wide, around each wrist and ankle.

I innocently inquired what he thought the mustard would do. It was the first time I had met him, but the look of pity he gave me made me his friend. I could see that he attributed my lack of therapeutic knowledge to my tender age. In well-rounded sentences well delivered he taught me that to draw blood away from an engorged organ nothing equalled mustard. When I suggested that a congestive chill was due to depression of the vaso-motor system, and that the good effects were due to the vis a tergo rather than the vis a fronte, his pity assumed the disdainful type.

Drs. Laidlaw and Laidlaw say they use from three to five thousand of these leaves per month, so their clinical experience is to be envied. Nothing could be more satisfactory than the effects of mustard seen in inflammations of the thoracic organs and congestions of the abdominal viscera, but it should be used with a rational idea of what it is to do. It has been said that "he is a wise doctor who knows when to withdraw his remedies," and it is so with these agents particularly. If the irritation is kept up too long the irritability of the muscles of the vascular walls is lost, and the subsequent paresis is harder to overcome.

They claim to relieve cystitis and strangury by applications over the legs and bladder. Do they wish to start life's purple stream "like the steady trend of an ocean current" towards the bladder? Also painful flow and suppression of menses are relieved by "reddening" the legs. Would they turn the oceanic current from the pelvic organs for suppression? This is but the fortunate result of a rich experience, for red-

dening the legs with mustard is, in a measure, "bleeding a woman into her own blood-vessels," forcing the blood from the extremities to the organs higher up. Why shouldn't it be good for suppression?

This is in no wise intended for an essay on counter-irritants, but a faint expression of preference for rational theory rather than empiricism.

CLAUDE BRANNON.

## THE TREATMENT OF DYSPEPSIA IN CHILDREN.

According to the Journal de Médecine de Paris for December 25, 1892, Tordrus, of Brussels, recommends the following method of treatment:

The curative treatment of dyspepsia in children depends upon the rapid elimination from the diet of all foods which are capable of undergoing fermentation in the alimentary canal. It is also advisable to rid the gastro-intestinal tract, by means of emetics or purgatives, of any fermenting materials which may already be present. Emetics are, however, rarely required, as purgatives generally fulfil the indications. Indeed, lavage of the stomach is probably better than emetics. Purgatives are generally taken without difficulty, particularly if administered with pleasant syrups, or in other cases a little powdered magnesia may be given in a little sugar and water. Particularly useful, however, is the action of calomel as an antifermentative. This may be given in small doses with powdered white sugar. In some instances great advantage will be obtained from the use of hydrochloric acid, unless there is much vomiting. On the other hand, if the child is anæmic and debilitated and has an insufficiency of gastric juice, the vomited matters will frequently present an alkaline reaction, and the following formula will prove of advantage:

B. Dilute hydrochloric acid, gtt. iii to v;
 Pepsin, gr. v;
 Distilled water, Jiss;
 Syrup, Jii.
 A small teaspoonful after meals.

In some cases Hayem claims to obtain very good results from the use of lactic acid if, in association with the indigestion, there is present a greenish diarrhoea. Under these circumstances the lactic acid seems to exercise an antifermentative action. Benzoin acid, sali-

cylic acid, and chloral are also medicaments which prove equally valuable in similar cases.

Hennoque has employed creosote if vomiting is present, as, for example, in the following formula:

R. Creosote, gtt. ii to iv;
Distilled water, Zi;
Syrup of althea, Ziv.
A small teaspoonful every two hours.

The creosote possesses antiemetic properties, and frequently arrests the vomiting, not only of children, but also in pregnancy and in phthisis.

Frequently, however, the odor of the creosote is so disagreeable that it is difficult to force children to take it. Where the physician believes that there is a condition of hyperacidity of the contents of the stomach, he should administer alkaline substances, chiefly the bicarbonate of sodium dissolved in some one of the mineral waters, such as Vichy or Vals, as, for example, as follows:

Bicarbonate of sodium, gr. iv;
 Distilled water, Ziss;
 Syrup of orange-flowers, enough to flavor.
 Two teaspoonfuls of this may be given every two hours.

Other authors recommend very highly the employment of lime-water in place of the bicarbonate of sodium or calcined magnesia. For violent colics, warm baths; and emollient cataplasms should be applied to the stomach, with frictions of camphorated oil. Internally it may be well to prescribe carminatives, such as phenol-water or camonile-water, associated with the subnitrate of bismuth, with syrup of anise. For the purpose of combating the chronic form of dyspepsia the following preparations are advisable, particularly if they are somewhat bitter. If constipation is present, the following may be employed:

R Powdered rhubarb, gr. iii; White sugar, a sufficient quantity. Divide into ten powders, and take three at one-quarter of an hour intervals.

Or,

B. Tincture of cascarilla, gtt. x;
 Distilled water, Ziss;
 Syrup, Ziii.
 A teaspoonful every two hours.

Or, again,

R Extract of cinchona, gr. iv;
Distilled water, Ziss;
Syrup of orange, Ziii.
A teaspoonful every two hours.

# Therapeutic Gazette.

Whole Series, Vol. XVII. DETROIT, MICH., PA., June 15, 1893.

Third Series, Vol. IX. No. 6,

CONTENTS.	Page	Page
CONTENTS.	The Occurrence of Plumbism among	The Treatment of Hemorrhagic Glau-
Original Communications.	Safety Electric-Lamp Workers 388	coma
PAGE	Three Cases of Atropine-Poisoning 388	Central Choroiditis treated by Subcon-
A Brief Review of some of the Recent	Formalin 389	junctival Injections of Sublimate 413
Practical Advances in Medicine and	Iodoform Injections in Local Tubercu-	Dendritic Ulceration of the Cornea 413
Therapeutics. By H. A. Hare, M.D. 36x	losis 389	Aseptic Collyria 413
A Case of Poisoning by Tartrated Solu-	Permanganate of Potassium as an Em-	On the Use of Thiersch's Skin-Grafts as
tion of Corrosive Sublimate. By E.Q.	menagogue and Utero-Ovarian Tonic 391	a Substitute for Conjunctiva 413
Thornton, M.D	The Administration of Morphine by the	Toxic Amblyopia from Iodoform 414
Physiological Action of Cimicifuga Race-	Rectum	Statistics on the Fatalities occurring
mosa. By I. N. Brainard, M.D 369	The Therapeutics of Pneumonia in Chil-	under the Administration of Anses-
A Contribution to the Treatment of Pul-	dren 392	thetics 415
monary Tuberculosis with Professor	The Treatment of Typhoid Fever 393	Surgery of the Spine 415
Koch's Tuberculin. By Karl von Ruck,	On the Treatment of Anzenia and Chlo-	Hydatid Cyst of the Liver 415
M.D 369	rosis by the Chief Iron Preparations	Puerperal Sepsis: Its Prevention and
Subconjunctival Injections of Corrosive	commonly in Use 397	Cure 4x6
Sublimate. By G. E. de Schweinitz,	The Use of Nerium Oleander as a Car-	A Modification of Thiersch's Method of
M.D 374	diac Tonic 400	Skin-Transplantation 416
Prevalent Errors in the Treatment of the	The Value of Ansesthetics in Labor 400	The Treatment of Gonorrhoea in the
Diseases of Women, By G. Betton	Aspidospermine in Dyspnœa 402	Male 417
Massey, M.D 377	The Hypodermic Injection of Ichthyol 402	The Treatment of Suppurative Buboes 417
The Treatment of Acute Bronchitis, By	Notes on Arsenical Neuritis following the	Removal by Electrolysis of an Extensive
Reynold W. Wilcox, M.D., LL.D 379	Use of Fowler's Solution 403	Hairy Nevus of the Face 418
	Tolypyrin	Bloodless Amputation of the Hip-Joint
Leading Articles.	The Effect of Hypodermic Injections of	by a New Method 418
The Administration of Cardiae Stimu-	Borax in Acute Pneumonia 405	Gallanol in Psoriasis and Eczema 420
lants 382	The Treatment of Sciatica 405	The Treatment of Tetanus
Subconjunctival Injections of Corrosive	On the Administration of Carbolic Acid 406	The Treatment of Malignant Tumors by
Sublimate 383	The Effect on Sucklings of Purgatives	Repeated Inoculations of Erysipelas,
The Treatment of Surgical Tuberculosis	administered to the Mother	with a Report of Ten Original Cases., 421 Treatment of Ringworm of the Scalp 423
of the Extremities by Passive Hyper-	On the Treatment of Diabetes Mellitus by feeding on Raw Pancreas and by	Parenchymatous Injections in Tonsillitis 424
æmia 385	the Subcutaneous Injection of Liquor	Plastic Operation for Cure of Deformity
The Healing of Intracapsular Fractures 386	Pancreaticus 408	of the Penis resulting from Gangrene 424
	The Influence of Suspension on Visual	or the 1 cms resulting from Gangrene., 424
Reports on Therapeutic Progress.	Difficulties in Nervous Patients 409	Baulaura
Treatment of Diabetes Mellitus with	On the Relation of the Eye to Epilepsy 410	Reviews 425
Salol 38x	The Therapeutics of Myopia 410	
The Treatment of Cretinism by Hypo-	Treatment of Detachment of the Retina 411	Correspondence.
dermic Injections of Thyroid Extract	The Treatment of Hydatid Cysts of the	London Letter 428
and by feeding with Thyroid Gland 381	Orbit,	The Value of Ethereal Antiseptic Soap
Contribution to the Calomel Treatment	Cataract Operations	in cleansing Wounds—Report of a
of Liver-Diseases 387	The Indications for the Enucleation of	Case
Chloride of Ethyl	an Eve	Corrigendum

#### Original Communications.

A BRIEF REVIEW OF SOME OF THE RE-CENT PRACTICAL ADVANCES IN MEDICINE AND THERAPEUTICS. Being the Address on Medicine before the American Medical Association, June 7, 1893.

By H. A. HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College.

THE function of the member of this Association who is called upon to deliver the annual address on medicine is not to give in detail the course and results of laborious laboratory investigation nor to weary his hearers with

long reports of cases. It is rather his duty to present, as far as lies in his power, certain broad views of the present status of the non-surgical side of our work as doctors of medicine.

The consideration of one particular field of work is also out of place, and I have, therefore, decided that a brief and necessarily imperfect discussion of the present status of therapeutics and diagnosis would enable me to fulfil, to some extent at least, the duty which has devolved upon me. The department of surgical therapeutics and diagnosis does not fall to my care, and will be ably discussed by Dr. Mudd to-morrow.

By therapeutics I do not mean to indicate a subject already well worn, though new,— namely, an enumeration of the new remedies which the manufacturing chemists are foisting upon us with an ardor beyond description, and with a success, so far as numbers are concerned, which is appalling to many conservative members of our profession. These drugs have their proper place, and form only part of the great line of advance which, while it is broken now and again by the development of a weak spot, is, nevertheless, moving forward, bringing with it much cause for congratulation and many promises for even more beneficent results in the future. To regard our therapeutics of today as improved only because of the invention of such compounds is to ignore the whole cause for encouragement,-namely, the increasing tendency to place all our remedial measures on a rational basis.

Very closely associated with this improvement in therapeutics is the increased accuracy of diagnosis which modern research has placed in our hands, for the correct diagnosis of a case must always be an important preliminary to proper therapy. Not the least of these diagnostic gains is the ability which we possess to recognize the presence of tuberculosis when the signs of the disease are so indefinite that positive information of the condition of the patient cannot be gained. Again, in many instances, where unusual and aberrant symptoms are present, microscopical examination of the blood may show the presence of various microorganisms. Nor should we forget the valuable aid rendered us by the advances in the diagnosis of gastric affections by the use of the stomach-tube, and the microscopical and chemical examination of the gastric contents, more especially in regard to the absence of hydrochloric acid in cancer and its excess in cases of gastric ulcer. Finally, an important aid to diagnosis in gastric disorders was the introduction of salol by Ewald to determine the motility of the stomach and the question of dilatation or atrophy.

The day is past when there is any excuse for the physician dodging a diagnosis and treating a patient on the indefinite basis of "general principles," and the public have learned that the shot-gun prescription of years ago is only a cover for the ignorance of the medical attendant who expects the various drugs to influence an area the diseased state of which he is himself unable to discover.

The prescription of to-day is to be written only after careful examination and study of a case, and its constituents must be directed towards the condition they are to modify. It is necessary, therefore, that diagnosis should be

well enough advanced to enable us to discover the exact stage of a malady and the precise condition of the patient's system in addition to the knowledge that a given disease is in existence in his body.

Fortunately, the improvements in diagnosis and treatment have kept pace with one another, although other branches of medical science have fallen to the rear. The advances have been rapidly yet gradually accomplished, not by startling leaps, but by small and lasting accretions, which have formed on the sides of our older views, either modifying their appearance or completely changing their aspect.

These gains have not been heralded to the profession and the world at large as have many of the newer surgical procedures, which are often so brilliant at their inception that they dazzle the professional eye to such an extent as to blind it to the subsequent shrinkage which takes place in their practical importance. Sudden rushes are attractive, and for this reason even the laity often chide the physician for failing to advance as rapidly as the surgeon. The very character of a surgical operation is destined to attract attention from the more humdrum, but none the less important, medical methods, yet it is the latter which require in many instances a greater amount of attention to the minute points of differential diagnosis. As I have pointed out elsewhere, the relation of the knife to a diseased tissue must always be identical, while the relation of a drug to a disease process must constantly vary with the perverted function of the special protoplasm in-The one carves the wood, the other grafts upon its living cells impulses which alter its activity. In the one case the questions of shock and repair are the points to be considered; in the other, the ever-changing vital processes, still more varied by perverted function, must be balanced and their importance weighed. For these reasons it is impossible for the physician to advance his methods by strides or bounds, and he can only remember the story of the hare and the tortoise when accused of being dilatory.

Leaving these general views of the question of medical, in distinction from surgical, advancement, let us, if possible, discover in what directions we have really made distinct advances. There are those who have seen method after method of diagnosis and treatment rise and fall, and who have in consequence become pessimistic as to the value of new ideas, partly, perhaps, because they have not employed them properly. There are others who are equally optimistic and excessive in the laudation of

new or old methods of diagnosis or remedial measures. A careful survey of the field certainly shows that a gain commensurate with the amount of labor expended has been made, and the only loss or stand-still that can be found is the tendency of the profession in general to rush after new things to the neglect of the old, which in many cases deserve more attention than is given them.

A very important part of this advance has been recognition of the fact that many conditions heretofore regarded as distinct individual maladies, and treated accordingly, are in reality merely manifestations of functional disorder elsewhere. No more interesting example of this can be adduced than anæmia. But a few years ago we were taught that anæmia was a state in which the blood was impoverished, and these conditions of anæmia might be divided into those which were simple and essential, or, in other words, those which would respond to treatment and those that would not. We had this empirical information, and we also knew by experience that while iron was useful in one form of simple anæmia independent of malignant disease, arsenic was more valuable in another. Later than this we came to regard anæmia chiefly as a manifestation of disease in certain blood-making organs, or an important symptom of many perverted functions; and, finally, the invention and employment of the hæmatocytometer and the hæmoglobinometer has enabled us to separate anæmia into a condition in which there is a decrease in the number of corpuscles or a decrease in the amount of hæmoglobin in each corpuscle. In other words, we now know that pallor may be due to too few corpuscles or too little hæmoglobin, and this being known, it is only a step to the understanding of the empiricism of years ago in regard to the use of iron and of arsenic,namely, that in that form of anæmia due to a diminution in the number of blood-cells, arsenic did good, because by its alterative powers it increased cell activity in blood-cell-making organs, while where hæmoglobin was lacking iron came particularly into play. For these reasons we find that small doses of alteratives. such as corrosive sublimate and other mercurials, often overcome the anæmia due to deficient manufacture of cells. We may, therefore, explain why arsenic usually fails to do good in chlorosis, an anæmia of deficient hæmoglobin, and succeeds in pernicious anæmia, which is characterized by deficient corpuscles, but relatively increased hæmoglobin.

It is, unfortunately, only too true that the entire subject of blood-making and blood-

breaking is as yet very imperfectly understood, but our therapeutic facts rest on rational ground now, if not before, and if the pathologist will give us more information upon these subjects, other remedial measures will be introduced or the empirical employment of others still further explained. Practically speaking, the therapeutist recognizes two very important points, the causes of which the pathologist must eventually solve,-namely, that one class of anæmias are due to defective or deficient hæmogenesis and another to excessive hæmolysis. The former are generally believed to form the simple class and the latter the essential or pernicious class. It is in the deficient hæmogenesis class that we fail. this, the causes of excessive hæmolysis are so various that we can further divide them into removable and permanent, the removable being represented by the cases in which copræmia or auto-intoxication takes place, and the others by the true pernicious anæmia, about which we really know very little save that most observers find evidence of profound hæmolysis in the percentage of iron in the liver, while in the darkcolored urine they believe a destructive agent exists which prior to its excretion has slaughtered many corpuscles. Unfortunately, it is at present impossible for us to separate clinically the hæmogenous anæmia from that of hæmolytic excess unless we find evidence of great corpuscular disintegration in a copious elimination of hæmoglobin in the urine, or a jaundice evidently hæmatogenous in character, or a large number of defective corpuscles, which would perhaps indicate defective hæmogenesis rather than that they were scarred veterans of a battle with a poison in the liver-cells or elsewhere. Postmortem signs often aid us in the differential diagnosis, but this is too late to do any good to the doctor or patient.

There is one point, however, about which there can scarcely be any doubt, and that is that in many cases iron is greatly abused, being given when there is no indication for it or more frequently given in excessive dose. By excessive dose I refer to as much as 6 to 10 grains in a day of reduced iron. The amount of iron in the human body is very small, and every study ever made of its absorption and elimination after absorption has shown that these processes are very slow. Hamburger recovered from the fæces nearly all the iron administered, and Jacobi proved that even when the iron was injected into the veins, ten per cent. was at once eliminated by the bowels, liver, and kidneys, and the remainder deposited in the liver, spleen, and other tissues in the same manner as is any metallic substance. The researches of Gottlieb have also been in confirmatory lines. When we consider that there is in the human blood only about thirty-nine grains of iron all told, we can see that the use of twelve grains a day in the course of a little over three days places a double quantity of the metal in the economy, which is not needed, and is either cast out, or deposited at any convenient spot there to lie undisturbed until it can be extruded.

Much, of course, depends upon the cause of the anæmia, but there is only one excuse for the use of the doses named,—viz., a condition of the digestive apparatus which results in the formation of a sulphide of iron in great quantity, so that only an infinitesimal amount escapes into the system. This explains the empirical fact that in some cases of chlorosis or intense anæmia iron has to be given in large doses to accomplish any good.

One of the best and most recent papers on this subject is that of Ralph Stockman, who gives a masterly summary of the subject of the absorption of iron in chlorosis. In this summary he points out that we have three chief theories as to the action of iron in anæmia. The firstthe absorption theory—is based on the fact that as iron is taken into the body with the food, the iron of the hæmoglobin must be obtained from this source, and therefore that medicinal iron given by the mouth must be absorbed. second theory rests upon the belief that iron is not absorbed when given by the mouth in addition to that in the food, but simply acts as a stimulant to the mucous membrane of the alimentary canal, therefore increasing the digestion of food, and so overcoming anæmia by the general improvement coincident upon proper nutrition. The third theory is that of Bunge, namely, that in chlorotic conditions there exists an excess of sulphur or sulphuretted hydrogen in the bowel which changes the iron in the food into a sulphide of iron, which Bunge states cannot be absorbed. He believes that the inorganic iron which is given as a medicine saves the organic iron of the food by combining with the sulphur, and so indirectly cures the anæmia by the protection afforded the food It is important to remember that each of these theories have been supported by many careful experiments, but it is also well to bear in mind that both the hypotheses and the experiments supporting them may be erroneously Thus, we have no right to imagine that based. the inorganic preparations of iron have a stimulating power over the alimentary mucous membrane, or even if they have, that this power is exercised in the peculiar line of aiding in the absorption of the organic iron of the food. Again, the researches of Hamburger, Damaskin, Gottlieb, Müller, Jacobi, and Socin, which show that after the internal use of inorganic iron there is no increase in the iron in the urine. are valueless so far as the conclusions drawn by them are concerned,—namely, that as there is no increase in iron in the urine there is none in the blood, and therefore it is not absorbed. These conclusions are not justified, because they are based on the erroneous view that because iron is not in the urine it is not in the blood. and because it is not in the blood it is not absorbed. Every one knows that in the case of chronic lead-poisoning, when the body is saturated with the metal, there is often no lead in the urine, the poison being deposited in the tissues; and if this is true of lead it may be of iron. Particularly is this to be remembered when we find Stockman quoting the researches of Mayer, Bidder, and Schmidt, and a host of others, who have proved that we are not to look to the kidneys as the path for the excretion of iron, but to the intestinal walls. Stockman has proved that when iron is used hypodermically it cures anæmia when it cannot stimulate the digestion or counteract sulphides.

Leaving the interesting and intricate subject of anæmia, and its diagnosis and treatment, we find another condition now recognized as a symptom, though often still classed as a disease, ---namely, asthma. In reality asthma is no more a distinct disease than is dropsy. It is a manifestation of disease or disorder in other organs which results to some extent in local pulmonary I need only mention the fact that every case of this condition will present some evidence of reflex irritation or other extraneous cause if it is carefully sought for, such as metallic poisoning, hay-fever, cardiac or naso-pharyngeal disease. We have, therefore, made an advance in the gradual knocking away of the props holding asthma on the pinnacle of being a distinct disease, and in a given case must direct our diagnostic and therapeutic powers first to the discovery and removal of the cause, and, second, to the relief of the local manifestation at the time of the attack, including, too, in many instances, the treatment of the secondary conditions caused by the paroxysm. will be remembered that at one time we had two schools of thought concerning the actual local cause of an asthmatic seizure, the one claiming that the obstruction to respiration was due to swelling and hyperæmia of the mucous membrane of the bronchial tubes, the other, that it was the result of a spasm of the muscular fibres of these tubes. Now we know that

both conditions exist, and that both are probably the result of irritation or perverted function of the vagus nerve, for the filaments of this nerve are not only supplied to the bronchial muscles, but also the local vessels. than this, the peculiar relation of these important nerves to the cardiac, gastric, and pulmonary area and to the recurrent and superior laryngeal nerves all tend to complete a chain of physiological evidence hard to equal, particularly when we remember that the vagus is the governing nerve of the respiratory function. and that its origin is intimately associated with important vital centres and nerve-roots in the medulia. Here, then, we have an improvement in etiological knowledge which enables us to discern a cause and give an explanation of almost every empirical fact regarding the use of antiasthmatic drugs, since nearly every one of these we now know depends upon its action upon the unstriped muscular fibres, the vagus nerve, or on the depression of reflex activity for its therapeutic power.

There is still another condition which is gradually passing from the list of diseases into the list of symptoms, -namely, diabetes mellitus. Its passage from the dignity of a disease in itself to the less important place of a manifestation of a morbid process underlying it is only delayed because the physiologist and pathologist have not succeeded in fully explaining the process of sugar manufacture in the body in health and disease. Even at the present time we scarcely appreciate the numerous causes which have already been discovered as capable of producing this symptom. Not only does injury to Bernard's centre in the fourth ventricle result in hepatic hyperæmia, which in turn results in glycosuria, but section of the vaso-motor fibres in the spinal cord at such a point as to involve the nerves of the liver results in similar disorder, according to Schiff. Pavy has proved that destruction of the superior and inferior cervical sympathetic has this effect, and it has been known to follow intense inflammation or irritation of such nerves as the sciatic and trigeminus, and some have gone so far as to explain the glycosuria, seen sometimes in those suffering from sciatica, to the sciatic irritation.

Aside from these nervous factors governing glycosuria, very much more recent studies have shown that the gradually-growing recognition of diabetes as a symptom is founded on a sound basis, for we have now before us undeniable evidence that such a thing as pancreatic diabetes may occur. Years ago it was first noted as a physiological possibility, but the recent

studies of Minkowski and Von Mering, with several others, have placed the entire question in a better light. Extirpation of this gland results in glycosuria; but if one-fifth of it is left behind the sugar does not appear in the urine. and this, with other facts, points to the pancreas having a power through a ferment rather than by its general secretion. Clinical cases are also now on record in which after death there has been found a condition of fatty degeneration or atrophy of the gland, either as the result of some morbid process or indirectly through the impaction of calculi in the pancreatic duct, which led to fatty degeneration or a cirrhosis, as in the cases recently recorded by Freyham. Therapeutics can do more for the diabetic than the pathologist can tell him of the cause of his disease, but the recognition of the fact that diabetes is a symptom of a number of conditions should lead the physician to the recognition of the fact that if a remedy successful in one case fails in another, it is probably because he has failed to discover that the cause in each case is not identical.

The ability to apply observation to cases, with resulting accurate diagnosis and still more accurate therapeutics, can be admired in every instance where it is observed, but it would be difficult to name a more eminent illustration of the beneficent results of such a trinity of good offices than is pictured by the work of Lauder Brunton had no-Brunton on the nitrites. ticed two facts, the one in the sick-room, the other in the laboratory. By the bedside he found that in many cases of angina pectoris a condition of intense arterial tension existed, which was manifested not only in the cord-like condition of the arteries, but also by the pallor of the skin due to contraction of the peripheral capillaries. This condition often preceded the attack of pain. Instead of tossing this discovery aside with the dogmatic belief that it was a secondary result of severe pain, he looked further to see if there was a causal relationship between the two conditions. Remembering that the over-distention of any muscular cavity, such as the bladder or intestine, results in pain, it occurred to him that a spasm of the arterial system might result in such over-distention of the heart-muscle, already feeble, as to cause the typical pain of angina pectoris; and this hypothesis was supported by a recollection of several facts,-namely, that exercise always produces contraction of the blood-vessels, partly by the contraction of voluntary muscles on large areas of capillaries, by the increased demands on the circulation, and, finally, that it is in gouty persons with irritable blood-vessel

walls that angina pectoris most frequently asserts itself.

In the laboratory Brunton had found that the nitrites all lowered arterial pressure, and by so doing caused the heart to empty itself very readily of blood, partly by depressing the vagus nerves and so permitting increased cardiac action. Here, then, was, in theory at least, the very remedy which should meet the indications in heart-pang, and the practical application of the hypothesis has given us that valuable method of treatment so universally employed.

The interesting relationship between physiological and chemical research and practical therapeutics when they are associated through logical deduction can also be readily studied in the production and use of a number of compounds, but in none other more satisfactorily than in the nitrites. Chemistry showed the various combinations which could be formed in this series, and proved that some of them were more stable than others. The pharmacologist showed that those which had stability were more slowly decomposed in the animal organism, and in consequence that their action was not so sudden nor so fleeting, and the therapeutist, recognizing that an unstable preparation, such as nitrite of amyl, could only be used for momentary effects, at once found the stable compounds of peculiar value when continued action was desired. It is because of this stability and consequent comparative slowness of action that the nitrite of sodium, potassium, and nitro-glycerin find favor, and that the still more recently employed and more stable compound, cobalto-nitrite of potassium, bids fair to come into general use.

I cannot leave this subject without pausing for the moment to insist on the importance of this question of seeking always for the cause producing any symptom in order that our therapeutic measures may be well applied. Many of us have doubtless experienced in boyhood "the pain in the side," about the heart, which was such an annoying and incapacitating complication of foot-races or the game of hare and hounds. For a number of years I wondered what the explanation of this pain was, and still more why it passed away as the boy got his "second wind." The reason is now evident. The first effect of severe exercise is to cause a rise of arterial pressure by reason of increased circulatory activity. This is soon accentuated by the obstruction offered to the flow in the capillaries of contracted muscles, which ordinarily are vast capillary areas, and, finally, the effort generates an increased

amount of carbonic acid gas in the blood, which stimulates the vaso-motor centre and so still further increases arterial resistance. result of these agents and the altered pulmonary circulation, the heart becomes distended with blood and pain results. Almost at once, however, the natural demand for blood made by all organs when in activity causes secondary hyperæmia in the peripheral capillaries, the lungs are able to catch up to and eliminate the CO., and the heart is able to carry on its duty with ease, even though the excessive exercise be continued, or, in other words, the boy gets his "second wind." There are good reasons, therefore, in the custom which prevails among some athletes of taking strychnine or caffeine or black coffee before a foot-race, on the ground that it saves their wind. By means of these powerful cardiac and respiratory stimulants they enable the heart to overcome resistance and avoid distention of its cavities, and also increase the ability of the nervous centres to discharge impulses which the nerve-trunks may the more quickly carry to the tributary muscles. Such a form of explanation underlies the pathology and treatment of "shock," a condition often wrongly treated because its rationale is not understood. All causes which give rise to great nerve impulses result in some degree or stage of shock, and these states are chiefly manifested in the heart and vasomotor system. As has been pointed out elsewhere, any frightened woman will exclaim, "You frightened me so my heart stood still!" and a second later will remark, "Just feel how fast my heart beats." The primary shock has so stimulated her inhibitory cardiac nerves that they at first inhibit the action of the heartmuscle, and then, having acted excessively, reaction sets in, and they permit the heart to move on uncontrolled even to an ordinary de-This condition, in a more or less modified form, is found in all cases of "shock." It has been proved by experimentation on the lower animals that it is practically impossible to produce death by irritation of the vagus, and we know that death rarely occurs in the first stage of shock unless there exist previously cardiac disease in the muscles or valves. We very rarely see shock in its first stage, except in the man who has "his breath knocked out of him" by a blow, not over his lungs, but over the solar plexus, which reflexly results in vagal irritation. It is the second stage of shock which we are called upon to treat. Here we have the entire vascular area in a condition of profound relaxation, a condition exceedingly dangerous to cardiac integrity. Nothing is more stimulating to

a man in accomplishing a task than a moderate amount of opposition or number of difficulties, and nothing is more stimulating to the heart than the normal resistance offered by a bloodpressure maintained by an intact vaso-motor The blood-vessels relaxed, the heart pumps, as it were, into vacancy, or as impotent of result and as exhaustingly as the wheels of an engine on a slippery rail. The result is rapid failure of the cardiac muscle by reason of futile endeavor and because the coronary arteries are imperfectly filled. The great arterial relaxation also results in serious changes in nutrition, and the profuse sweat weakens and chills the body. It is at this time that the employment of belladonna or atropine becomes valuable in the extreme. By its peculiar influence on the vaso-motor centre it produces normal vascular tone, stops the leaking skin, and steadies the circulation, simultaneously tending to raise bodily temperature. If at the same time hot coffee be given, as a cardiac tonic containing heat, and strychnine is used, we have a fulfilment of every indication.

Elsewhere I have called attention to what seems a common error on the part of many practitioners,-namely, an unnecessary dread of good-sized doses of strychnine. We frequently see  $\frac{1}{60}$  or  $\frac{1}{30}$  grain given at a time when better results would be obtained if 10 to 1 was used hypodermically. Profound collapse or advanced shock enables the patient to stand large doses of this drug, as does severe pain enable him to withstand full doses of opium, and full doses must be used if good results are to be expected. The question of the effect of mental shock or fright upon surgical shock is of great importance. Even animals, when brought directly from the street to the operating-table, show these signs most markedly, and how often does the gynæcologist try to get his patient away from the sight of the preparation for the operation, or away from the little children, to whom the mother bids a tearful good-by before going on the table for a severe operation!

A valuable illustration of advances made in our understanding of certain diseases is afforded by epilepsy. There is probably no one here to-day who does not remember the time when the seat of origin of the epileptic seizure was in dispute, some holding that it was due to disorder of the circulation at the base of the brain and others that it arose from disturbance in the cerebral cortex. Thanks to the studies of Ferrier and a host of others in England and on the Continent, we now know that true epileptic seizures have their origin in the cortex, and

practically nowhere else. This being known, the rationale of the employment of the bromides in this disease was speedily explained through the researches of Albertoni and of Seppilli, who found that these preparations so depressed the cerebral cortex in its motor area that far stronger currents were required to elicit muscular response when the animal was under the influence of bromides than when in his normal state or under the influence of the ordinary anæsthetics. At the same time that this depressant action of the bromides was discovered, its powerful influence as a depressant to reflex action became fully appreciated, and its influence in a convulsive disorder, such as epilepsy, became the better understood. It is true that there is still a great deal to be done before we discover the cause of the epileptic attack, or, in other words, the changes in the cerebral cells which permit of epileptic discharges; but even in so strange a disorder there is reason to hope that improved methods of research may eventually remove this blot on the fair fame of modern pathology. Nor is this hope without foundation for its accomplishment. Those of you who have had the opportunity to study the elaborate research of Hodges, of Madison, in this State, will already have reasoned that if the changes in the nerve-cells produced by excessive exercise can be studied by means of staining and the microscope, it is not impossible for the changes in epileptic cells to be noted by methods of a similar character, particularly as epilepsy is a disease which is seen in the lower animals as in man. While such studies as those which have just been mentioned show advances, in the indications for and rational employment of drugs, instances are not lacking in which contraindications to the use of some remedies have been developed or the empirical knowledge of their contraindication explained. Thus, it had been a recognized fact in therapeutics that quinine, when given in full doses, always caused an increase in the number and severity of epileptic seizures in those who were subject to this malady, but it remained for the experimental therapeutist to show that quinine stimulated the cerebral cortex, and so caused increased irritability of the motor area.

Again, the knowledge of the depressant action of chloral on the motor tract of the spinal cord, and the same effect of bromides on the sensory tracts, has placed in our hands the best antidotal treatment for strychnine-poisoning; while the discovery that conium produces muscular quiet by depressing the motor nerves and not by acting on the spinal cord, shows us that in spinal convulsions its employment is

irrational, because it only blocks the pathway to the muscles, instead of preventing the discharge of impulses by acting on the parts directly at fault.

The discussion of this topic would not be complete did I not refer to one very familiar example of the value of physiological and pathological research in relation to disease,—namely, the discovery of the malarial germ, and the fact that quinine kills this organism. Only ten years ago we were taught that the use of quinine in malarial disease was purely empirical, and to-day its rational employment is accepted universally all over the world.

In our pride over our advances made because of good sense we should not, however, sneer at some improvements equally valuable, which are in our hands to-day rather because of good luck than by logical deduction. Thus, the scarcity of quinine and its consequent high price forced the chemist to seek for a method of producing this drug by synthesis, and the result has been not only the direct discovery of the value of salicylic acid in rheumatism, but, indirectly, the development of that invaluable class of remedies of which antipyrin is the chief. Nor does the value of acetanilide, phenacetin, and antipyrin rest upon the action for which they were introduced into medicine, -namely, the reduction of fever,-but rather upon their power, accidentally discovered, to relieve pain.

The value of some of the compounds is in several instances quite equal to that of the integral parts. Thus, salol is a remedy which many of us would no more dispense with in intestinal diseases than we would give up opium, quinine, and digitalis.

Of the prospective value of the treatment of infectious diseases by injections of serum from those who have been rendered immune, of the promises held out to us by the pathologist of a more clear understanding of many puzzling diseases, and of the possibilities of drug therapeutics in the near future, I shall not speak. Much might be said of them, but at this time they exist more in the future than in the present.

We are certainly passing through the golden age of medicine, and by the rational line of our advance are avoiding many of those theories which have misled our predecessors into beliefs since proved to be erroneous.

The American Medical Association not only links the profession into a chain which overcomes superstition and discovers fallacy, but by its ennobling influence produces unconsciously a wave of medical advance which sweeps on as grandly as does that of any other art or science known to man.

## A CASE OF POISONING BY TARTRATED SOLUTION OF CORROSIVE SUBLIMATE.

By E. Q. THORNTON, M.D.,

Demonstrator of Therapeutics, Jefferson Medical College; Acting

Assistant Surgeon United States Marine Hospital Service.

Y object in reporting the following case of poisoning by tartrated solution of corrosive sublimate is not with the view of advocating the use of any new antidote to mercury. but to call the attention of the profession to the fact that egg albumin—the ordinary antidote will not alone be sufficient in cases of poisoning from corrosive sublimate to which tartaric acid is added. The case will perhaps be of some interest, as, since the general introduction of this substance as an antiseptic and germicide, most cases of poisoning from it will be with the acidulated solution or tablets. As is well known, the acid is added for the special purpose of preventing formation of the insoluble albuminate of mercury when it is brought in contact with open wounds. prevents the formation of albuminate when mixed with egg albumin, unless the acid is first neutralized by an alkali.

On Sunday morning, April 2, 1893, a young man of about twenty-one years of age called at my office and in a very excited manner told me he had about ten minutes before swallowed a quantity of solution made from a tablet of corrosive sublimate and tartaric acid.

As near as I could judge about three grains of the poison had been taken.

Detecting his mistake, he immediately swallowed several large draughts of water, and hurried to my office. The only symptoms that he presented were metallic taste in the mouth and burning pains in the œsophagus and stomach; he had not vomited.

I at once administered to him the white of three eggs and a teaspoonful of bicarbonate of sodium, thoroughly mixed in a cup of water; this was followed immediately by three cups of water, and in two or three minutes by a tablespoonful of mustard stirred in a glass of water. Vomiting immediately followed. At short intervals I twice repeated the above. After thus antidoting the poison and freely emptying the stomach, I administered the white of three eggs, half a teaspoonful of bicarbonate

of sodium, and three glasses of milk. Lastly, one ounce of sulphate of magnesium was given, for the double purpose of emptying the bowel and to set up endosmosis, so as to prevent absorption of any of the mercury that might have remained.

The only disagreeable symptoms which presented themselves after this energetic treatment were slight soreness in the œsophagus and stomach, which passed away about the third day.

PHYSIOLOGICAL ACTION OF CIMICIFUGA RACEMOSA.

By I. N. Brainard, M.D., Alma, Mich.

As there are not very many studies of the action of cimicifuga on the human being when the drug has been taken in overdose, the following report may be interesting:

On November 26 I took 3 drachms of the fluid extract of cimicifuga, and in about half an hour had a feeling of fulness in the head; the face was flushed; there was a sensation of warmth all over the body, with vertigo, which was increased when in the erect posture. There was also considerable pain at the end of the spine. After an hour had elapsed all these symptoms were accentuated. There was redness of the eyes, but the pupils were normal, as was also the bodily temperature. The pulse was 100 and full, and there was marked increase in arterial tension. At no time was there any slowing of the pulse or any signs of cardiac depression. The headache now became excessively severe, and the spinal cord was apparently much stimulated. The muscles in the back, arms, and legs were hard and trembling. Two hours later these symptoms continued with increased severity, and nausea was added. There was increased peristalsis, but no purging. Four hours after taking the poison I drank some warm water, and vomited three times during the next five hours. The symptoms continued, nevertheless, until the eighth hour. The headache was so exceedingly severe that it was necessary for my wife to anæsthetize me with chlo-There was a great deal of backache and restlessness. Eight hours after the poison was taken sleep came on, from which I waked several times with marked priapism. The effects upon the spinal cord and nerves were felt for a little over two days. was considerable increase of bronchial secretion. There was no increase in urinary flow or in the secretion of the skin during the entire period of the paroxysm.

A CONTRIBUTION TO THE TREATMENT OF PULMONARY TUBERCULOSIS WITH PROFESSOR KOCH'S TUBERCULIN.

Supplementary Report, showing the Present Condition of Twenty-five Cases treated Two Years ago, read before the American Climatological Society, May 26, 1893.

By Karl von Ruck, M.D., Asheville, N. C.

REPORTS of cases showing the results of any particular procedure in therapeutics, made immediately or within a short time after their application, are current in medical literature, and while they unquestionably throw light upon the utility or otherwise of the treatment employed, it is not to be doubted that many such reports would require modification, indeed, might show the reverse of the conclusions first arrived at, if a longer time had intervened by which the permanency of the results or the final issue of the case could have been established.

We are the more ready with our reports if our work has apparently been successful and if the medical or surgical procedure is new and is attracting attention at the time; but if hasty reports and conclusions have ever been offered, it certainly was the case with the effects of Professor Koch's tuberculin. Indeed, in many instances a few weeks of experimental employment of the remedy was deemed sufficient for enthusiastic recommendation or for absolute condemnation.

It is now two years since I wrote a report of my first twenty-five cases treated with Koch's tuberculin, which report was presented to the American Medical Association at Washington on May 7, 1891, and subsequently published in the Therapeutic Gazette for June 15 of the same year. In making the report it was my earnest endeavor to be conservative, and I purposely published with it the detailed history and all important data in connection with the treatment of each case, so that the reader might be able to judge for himself the benefit each patient had derived.

The cases were divided into three classes:

Class A, five cases who had one or both upper lobes involved, but without destructive changes, the general health of the patient being still comparatively good.

Class B, seven cases with more extensive disease or moderate destructive processes, but still in a fair physical condition.

Class C, thirteen cases still further advanced in local disease, with considerable constitutional impairment, but still in a condition justifying some hope for improvement.

I concluded that report with the following remarks:

"First.—That, according to my experience with the patient under constant medical supervision, and under the precautions used, the remedy CAN be given with the avoidance of all unpleasant symptoms or danger.

"Second.—That while I believe that I have derived material benefit, the experience of many additional observers, under a similar mode of management and administration to that adopted by myself, is required to establish the exact value and range of applicability of the remedy; and,

"Third.—That the combined means by which my results were obtained appear to deserve the favorable consideration of the profession."

It is now my purpose to show the outcome of these twenty-five cases two years later, as a supplement to my first report, with such explanatory remarks as may be essential for each individual case. To this end careful inquiry has been made as to the present condition of each patient.

Case I., Class C, was reported as slightly improved when the treatment was discontinued on March 11, 1891.

This patient showed further improvement after the discontinuance of the remedy, and remained in the institution for fifteen months thereafter. Under a course of Liebreich's cantharadin, the larynx made remarkable improvement, the ulceration of the epiglottis healed, and the infiltration disappeared almost entirely, and sufficiently so as to result in the complete restoration of the voice; her nutrition also improved. In March, 1892, active changes again recurred in the lungs, which were accompanied by the usual symptoms of fever, increased cough and expectoration, and loss of flesh. The larynx remained unaffected. All these symptoms subsided under a second course of tuberculin, thirteen injections, from one-tenth to one milligramme, and the patient left the institution in May greatly improved.

At this writing a relapse of her lung-affection of recent date has come to my knowledge.

Case II., W. S., Class B, was reported as apparently cured. This patient has remained well to this date, and is entirely free from all symptoms. In April, 1892, he had an attack of la grippe, with an intense bronchitis of one week's

duration, from which he made a prompt and perfect recovery.

An affection of the respiratory organs like la grippe may be looked upon as a crucial test of the permanency of recovery, and the frequency with which we note active symptoms to supervene in latent tuberculosis in connection with la grippe is well known to every practitioner.

The sputum during the existence of the acute bronchitis in connection with la grippe contained no bacilli.

Case III., Class A, reported as improved, has made an entire recovery, and has remained free from all symptoms to this date.

Case IV., Class C., was reported as improved and the laryngeal disease cured. This patient made still further improvement, returned home, relapsed as to his lung-affection, and died in July, 1892. The result as to the larynx was permanent until death.

Case V., Class C, reported as not improved, died in 1891.

Case VI., Class C, reported as not improved, died in 1891.

Case VII., Class A., reported as cured, has continued free from all symptoms, and is entirely well at the present time.

Case VIII., Class B, reported as apparently recovered, returned home; relapsed in fall of 1891; returned, and was treated again with tuberculin in the winter of 1891-92. He was again materially improved, but not to the degree as in the first course of treatment. He is free from fever, but coughs and expectorates. His general health is fair. He is still greatly improved as compared with his condition before his first treatment.

Case IX., Class A, was reported as apparently cured. He has remained entirely free from all symptoms to the present time, and is enjoying perfect health.

Case X., Class B, reported as greatly improved, returned home in May, 1891. His improvement has not only continued to the present time, but I have recently been informed of his entire recovery.

Case XI., Class B, reported as apparently recovered, has been free from all symptoms to the present time, and is entirely well.

Case XII., Class C, reported as improved, relapsed, and died in 1891.

Case XIII., Class C, reported as improved, relapsed in 1892, and died since.

Case XIV., Class C, reported as greatly improved. No recent report obtainable. He continued in his improvement to the date when last heard from,—October, 1892.

Case XV., Class C, reported as greatly improved, died in 1891.

Case XVI., Class A., reported as apparently recovered, has remained entirely free from all symptoms, and is perfectly well to the present time.

Case XVII., Class C., reported as improved, continued so when last heard from in November, 1892. No response to my recent inquiry.

Case XVIII., Class C, reported as greatly improved, continued so when last heard from. No recent report obtainable.

Case XIX., Class C, reported as improved, relapsed, and died in 1891.

Case XX., Class B, reported greatly improved, according to recent information has entirely recovered without resorting to further treatment.

Case XXI., Class C., reported as improved, is about the same at the present time.

Case XXII., Class B, reported as improved, has entirely recovered.

Case XXIII., Class B, reported as apparently recovered, has continued in good health, free from all symptoms, to the present time.

Case XXIV., Class A, reported as greatly improved, has entirely recovered, and is free from all symptoms.

Case XXV., Class C, reported as improved, obtained still further improvement. He subsequently relapsed, but improved again, and is now free from all active symptoms.

We find, therefore, that I reported in 1891, in the early stage, five cases treated, three of which were believed to have apparently recovered, one to have been greatly improved, and one to have been improved; all of which have made an ultimate recovery, no relapse having occurred in two years.

In the more advanced stage—Class B—I reported seven cases treated, four of which were thought to have apparently recovered, two to be greatly improved, and one improved. Of these seven cases we find six to have made a final recovery and to be well two years later, while one relapsed and is again improved.

This gives us for the early stage one hundred per cent. of recoveries, and for the middle stage eighty-six per cent. of recoveries and fourteen per cent. of improvements, without a death in two years.

In the far-advanced stage of Class C, I reported thirteen cases treated, four of which were greatly, six moderately, and one slightly improved; two had made no improvement. Of these cases, six are still alive, three of which have continued greatly improved and three others improved, while seven have died.

As to the share attributable to the treatment with tuberculin in obtaining these results, I am still and always shall be unable to mathematically demonstrate it. Every thoughtful reader who is free from prejudice must, however, admit that these results are such as have never been obtained by any mode or combination of treatment heretofore known.

In a paper upon the prognosis in pulmonary tuberculosis, published in the *Medical News*, September 13, 1890, I reported eighty-one early-stage cases corresponding to Class A, of which a subsequent inquiry, similar to the present one, showed twenty-four per cent. of recoveries and twenty-one per cent. of improvements. In a more advanced stage, of four hundred and thirty-four cases treated, nine per cent. recovered and eleven per cent. were improved. While a similarly large number of my cases treated with tuberculin might have shown the present results modified, yet it cannot be conceived that such a difference as this would be possible.

That it does not exist is, however, amply proven by my subsequent experience with a greatly increased number of cases treated since with tuberculin with equally good results, and which I shall report in a future paper.

It has been urged that the results obtained by me with tuberculin are not attributable to the remedy so much as to the favorable climate and the correct management of the patients in a special institution where this work has been done. If this were so, why have I never before been able to accomplish results even half as good under the same conditions? Why have other patients failed to improve and recover who, either on account of individual prejudice or that of their home physicians, have not received this remedy, and who were treated with every care possible during the last two years in the same institution and with the same advantages?

Why, then, it will be asked, is it that others have failed to accomplish such results, or, on the contrary, have testified to the injurious effects of the remedy with many of their patients? I anticipate this question because I have been asked it many times by medical friends who have visited my institution and satisfied themselves of my results.

In answering it I must first call attention to the fact that, with few exceptions, the administration of tuberculin, both in Europe and in this country, has been made upon the original mode first proposed by Dr. Koch.

For those who do not remember it, I may

add that the beginning dose recommended by him was I milligramme or more, and that the remedy was rapidly pushed in increasing doses to 100, or even more, milligrammes. This maximum dose was attempted to be reached in a month or six weeks, unless the patient were so completely "knocked out" by fever and constitutional reaction that the more prudent experimenter pursued a somewhat slower course, and the blind followers were overtaken by dismay and disaster in the acute processes induced with the remedy given in excessive doses.

In this connection we must also remember that Dr. Koch's first experiments were upon early-stage cases only which were physically able to occasionally bear even a severe fever reaction, and who happened to suffer no material harm, and that the cases treated were but few when the remedy was given to the profession. Under his plan of administration the results in early-stage cases were gratifying as compared with other modes of treatment, and, in a truly early stage, all other experimenters have seen equally good results with his own. Only in such early-stage cases did he recommend the use of the remedy, and had it been confined to such its utility would never have been questioned. The disasters occurred chiefly in the more advanced stages, and under the great expectations current at that time, patients, both in Germany and in this country, manifestly within a few weeks of their death, received tuberculin injections in quantities which, by their local and constitutional effects, several times caused immediate death.

In the earlier stages, too, it was found that unfavorable effects were occasionally induced from the large doses given, but these bad effects were the more uniform as the treatment was applied to patients whose general health and strength had been more and more impaired during the course and advance of the disease.

Such application of the remedy had never been contemplated by Professor Koch, and all for which I blame him is that he permitted it in the hospitals of Berlin, and became aware of it through the literature of the profession elsewhere without entering his protest.

Remembering, however, that he is not a practising physician, that all treatment of cases was carried out by his colleagues, and that he himself possesses no recent clinical experience in the treatment of consumption or any other disease, it must at this time seem strange that no one for some time dared to depart from the original dosage based upon experience with half a dozen cases only, two of

which were then said to have apparently recovered.

With the greatest admiration for Dr. Koch and his labors, this appeared to me ludicrous, nevertheless, and when I mentioned my convictions to one of the hospital chiefs in Berlin, he reproved me as though I had committed the "unpardonable sin." "Would you instruct the master?" said he, in utter astonishment.

All those who, after their first disappointment, did not throw the remedy overboard, have since, at least in part, adopted my method of administration, and I believe that I have been the first one on either side of the water to enter a protest against its use as originally employed. Since that time excellent results have been obtained from minute and slowly-increasing doses, some of which I cited in a paper published in the Southern Medical Record for September, 1891, and my results have continued as favorable as ever under this method adopted by me within the first few weeks of its use.

The most recent report of Dr. Thorner, in Berlin, presented to the "Verein für Innere Medizin" on March 8, on his two years' use of Professor Koch's tuberculin, and which is highly favorable to the remedy, shows that he begins with 210 milligramme, and increases about as I do. Under such doses he never saw any unfavorable effect. He emphasizes that the secret in its successful employment is the proper application of the remedy. My method of application is practically as follows:

Cases must be properly selected, and no patient is suitable for treatment with tuberculin who at the time presents symptoms of acute inflammatory changes in tubercular areas or evidences of softening, with septic fever.

Other modes of treatment, as indicated in my paper on the treatment of pulmonary tuber-culosis (*Times and Register*, January 6, 1893), must be resorted to, by which these symptoms are first controlled. With these exceptions, patients in any stage where the disease is still confined to the lungs and throat are eligible to the treatment.

The treatment should be carried out in a special institution or hospital, where sufficient control and oversight alone are possible. It certainly must not be delegated to junior assistants or to physicians who do not possess large experience in physical diagnosis of chestand throat-affections, or who are not otherwise well experienced in the treatment and management of cases of pulmonary and laryngeal tuberculosis. Close observation is indispensable.

A week's observation of local and general symptoms, fully recorded at frequent intervals,

must precede the use of the remedy, to assure the absence of contraindications.

A physical examination of the chest must precede and follow each dose given, the results of which, to the minutest changes observed, to be carefully recorded upon a diagram for comparison.

The difference between a local and general reaction must be clearly understood. The former consists in an increase of the local auscultatory phenomena, with or without slight increase in cough or a sensation of fulness in the tubercular area of the lung. In the larynx or other visible tubercular processes there are observable increased vascularity, sometimes slight swelling, and always increase of the secretions from that part.

Any effect beyond this is undesirable, and can be positively avoided if enough interest is taken in watching the case.

A general reaction, on the other hand, shows, in addition to the local effect, rise of temperature, increase in pulse-rate, sometimes nausea, even vomiting and diarrhea. Those symptoms, if well marked, are signs of positive danger, and repetition of the same dose, or an increase of the dose, is almost sure to be followed by relapse.

No dose must be repeated until the effect from the previous dose has subsided, and then not until after twenty-four hours.

If the local reaction has been well marked or prolonged, a return to the dose which had previously been inoperative is required, and the increase must thereafter be the same as it would have been had a larger dose never been given. The same is of course equally true if general symptoms have been produced.

The reaction occurs, as a rule, in from six to eight hours. I have, however, seen it as early as three hours and as late as thirty-one hours after a given dose; this must be borne in mind, and frequent examinations, especially in the beginning of the treatment, are necessary, so that the effect may be recognized. The duration of the reaction is, as a rule, about six hours, if only local; if general, it may last twelve hours and longer. I have found that the same patient reacts, as a rule, within about the same limit of time.

A certain dose having been given without reaction following, this same dose is, nevertheless, to be repeated once before an increase is permissible:

If a too severe local or general reaction is observed, the patient must be put to bed and kept perfectly at rest until the reaction has entirely subsided.

Beginning with  $\frac{1}{20}$  milligramme as a trial dose,—to which I have never seen a response,—the next dose is  $\frac{1}{10}$  milligramme, and the increase is thereafter  $\frac{1}{10}$  until 1 milligramme is reached; then I increase  $\frac{1}{5}$  milligramme at a time until 2 milligrammes are reached. After that dose the increase is  $\frac{1}{2}$  milligramme up to 10; from 10 to 20 milligrammes I increase  $2\frac{1}{2}$  milligrammes, and thereafter 5 milligrammes, at  $\frac{1}{5}$  time.

Periods will be observed when for weeks together no local or general reaction is observed, while the subjective and objective improvement of the patient progresses favorably; and whenever a point has been reached where this improvement is radical and active symptoms have entirely subsided, this is the time to stop the use of the remedy, allowing an intermission of from two weeks to a month. If no relapse has occurred in this time, if everything is highly satisfactory, and the recovery is apparent, we keep the patient under observation as long as possible, otherwise a repetition of the treatment is of course necessary.

In the second course we begin again with  $\frac{1}{10}$  milligramme, but increase after each dose so long as no local reaction is produced.

My results have been obtained upon this plan; and while other plans may also be safe and accomplish good results, and while some one may devise even a better plan, until better results than mine are shown by others, no change from my method is, in my judgment, permissible.

I have thus treated over one hundred patients with between six and seven thousand injections, and, with the exception of my first week or two of experimental use, I have never produced any effect which has in any way been detrimental, nor has there been one single case in which the treatment has caused discomfort. I have not found any advantage from Hunter's modification, and am of the opinion that it is in no wise safe to increase it faster than the original tuberculin.

He who cannot have his patients under close and constant observation, or who gives the remedy with less care, simply takes chances, and if no disaster follows it is good luck, nothing more.

As shown in the earlier part of this paper, I have one hundred per cent. of recoveries in the early stage; in the second stage, recovery has resulted in eighty-six per cent. and radical improvement in fourteen per cent.; in the last stage, marked improvement in forty-six per cent.; and these results have lasted over two years. In the cases treated since, the results

are equally good, and in the advanced cases promise to be slightly better still.

It is true I have had the advantage of an excellent climate. I have also made use of every other available means at my command whenever I believed that they could aid the patient's improvement. I have exercised the greatest vigilance in the use of the remedy, and have never allowed myself to take any chances, nor have I taken things for granted when I could satisfy myself by painstaking examination and inquiry, and the patients were all treated in my institution and under my constant care. The special treatment has not been delegated to assistants, but was carried out by myself, without sparing time and labor; but, with all this, it is also true that I have been equally careful and interested with patients who were treated in the institution before the advent of tuberculin, and with those who, during the two years past, did not receive tuberculin for reasons stated before, and the results, as compared with those in connection with tuberculin, offer no chance for comparison.

In my previous writings on tuberculin I have been exceedingly careful not to commit myself too far. I am now ready to stand by the remedy, not in recommending it as a cure-all, or under all conditions and manifestations of the disease, but certainly as a remedy of the greatest value when used as indicated in this paper. With me now it is no longer on trial as an experiment. On the contrary, I find its effects as reliable and as uniform as I could hope them to be under the great variety of individual conditions, such as constitution, stage of the disease, organs involved, and complications present.

If my precautions and methods in the use of tuberculin are really essential for good results. as I have found them to be, and which riper experience of two years or more of other observers seems to confirm, we must not blame the remedy if it failed to come up to our expectations under its erroneous use in unsuitable cases and in excessive and highly-dangerous We should the less criticise it when the results were unsatisfactory in the hands of men with little experience in close physical diagnosis and in the management of the disease, some of whom dealt out their doses at their office hours without again seeing their patient until he came for his next dose, or until the physician was summoned to find how ill an overdose had made his patient.

Such experience was perhaps necessary to confine the use of the remedy to safe hands and to teach us the care and circumspection which are essential in its employment.

SUBCONJUNCTIVAL INJECTIONS OF COR-ROSIVE SUBLIMATE.

A CLINICAL LECTURE DELIVERED IN THE JEFFERSON MEDICAL COLLEGE HOSPITAL, MAY 12, 1893.

By G. E. DE SCHWEINITZ, M.D.,
Clinical Professor of Ophthalmology in the Jefferson Medical College;
Professor of Ophthalmology in the Philadelphia Polyclinic;
Ophthalmic Surgeon to the Philadelphia Hospital.

ENTLEMEN:—Those of you who have attended the clinical lectures on ophthalmology during the winter session which has just terminated have not infrequently heard references to the treatment of various diseases of the eye, and particularly those of syphilitic origin, located in the uveal tract, by means of subconjunctival injections of the bichloride of mercury. Recently, we have been studying the effect of these injections upon patients who attend the out-service department, and it is expedient that you should become more thoroughly acquainted with the character of the lesions that are most favorably affected, and with the doses, technique, and complications.

Subconjunctival injections are by no means a new method of treatment. So long ago as 1866, Rothmund\* advocated the injection of a solution of salt beneath the conjunctiva for the purpose of absorbing corneal opacities. condit treated with success abscess of the cornea and hypopyon-keratitis with subconjunctival injections of sublimate; he also employed the method in iritis and in choroiditis and other diseases of the deeper structures of the eye. Darier † has particularly urged the method, and much credit is due to him for carefully classifying the diseases in which he found it successful. Quite recently he has again reviewed the whole subject, and reasserts his adherence to a method which he believes is based upon the soundest therapeutic principles and has been productive of the happiest results.§

The theory of this treatment is very evident,—namely, that a drug which is believed to be antagonistic to the morbid process shall be introduced directly into the affected organ, and thus come in contact in a concentrated form with the lesions which it is to antagonize. Under these circumstances it is plain that its efficacy is more enhanced than would be the case if it reached the organ after a general distribution through the system. As has been pointed out by several authors and one or two

<sup>\*</sup> Klinische Monatsblätter für Augenheilhunde, 1866, p. 171.

<sup>†</sup> Giorn d. R. Accad. di Med. di Torino, 6, 7; abstract in Nagel's Jahresbericht, vol. xx. p. 258.

<sup>‡</sup> Archives d'Ophthalmologie, 1891, p. 449.

<sup>&</sup>amp; Annales d' Oculistique, April, 1893.

reviewers, this method is analogous to local influence secured by the instillation of a mydriatic. Dilatation of the pupil may be produced by impressing the constitution with atropine or belladonna, but it is more reasonable and more simple to drop a solution of this drug in the conjunctival cul-de-sac. In like manner the antiseptic action of bichloride of mercury may be obtained by instilling a solution of it in the conjunctiva, or its effect upon the eye may be acquired by giving it by the mouth, or by injecting it hypodermically, but its absorption is more rapid when it is inserted beneath the conjunctiva, and certain experiments, especially those performed by Pflüger, seem to show that fluids thus introduced into the eye directly reach the cornea and anterior and posterior chambers, the suprachoroidal space, and even the peripheral layers of the crystalline lens and the vitreous humor. Therefore, as Grandclement has well said, it is not surprising if microbic or organic diseases, situated in the parts to which the sublimate has access when injected beneath the conjunctiva, disappear more promptly than in ordinary ways, provided they are incompatible with its bactericidal, or at least its antiseptic, properties. It is possible, too, that these injections act somewhat in the nature of a revulsive; at least, this is the view entertained by the author just quoted, who believes that they have some curious constricting power on vascular stases in the affected coats of the eye.

Be this as it may, the fact remains that a goodly number of cases have been reported in which excellent results have followed the method. and these may be classified as follows: Infective ulcers of the cornea; suppurative conditions,—for example, hypopyon-keratitis and corneal abscess; and diseases of the uveal tract, especially when they are of syphilitic origin and when they are not too acute,—i.e., parenchymatous iritis, cyclitis, irido-choroiditis, and choroiditis itself. Less encouraging are the results which have been obtained in neuritis, retinitis, and atrophy of the optic nerve. Finally, and this is a most important point, a certain number of cases of sympathetic ophthalmitis, usually presenting themselves in the form of a uveitis, are said to have been cured by subconjunctival injections of corrosive sublimate. Indeed, as you will remember from the lectures last year, not only has the corrosive sublimate been injected beneath the conjunctiva in cases of this character, but also directly into the vitreous humor, constituting then an intraocular injection. The subconjunctival injections, however, are safer, and there is not yet sufficient evidence at hand to justify unequivo-

cal recommendation of intraocular injections of antiseptic substances.

Let me now present to you a few cases and demonstrate the method. The first, a young man of twenty-two years of age, has been under my care for a long time, not only in this hospital, but also in the Philadelphia Hospital. When first seen, more than a year ago, he had an acute serous iritis, or keratitis punctata, due to acquired syphilis. This gradually subsided under the usual treatment, but, as you see, the centre of each cornea is occupied by a considerable white infiltration which has stubbornly resisted efforts to dissipate it. He has received a number of injections of sublimate beneath the conjunctiva, and although the test-types do not show any improvement in vision, he states that his sight is clearer. The injection is performed as follows:

The eye is thoroughly cleansed, and anæsthetized by the instillation of a four-per-cent. cocaine solution, and a hypodermic syringe thoroughly sterilized with carbolic acid (1 in 20) is used for the purpose of introducing the drug. I seize a fold of conjunctiva about eight millimetres from the corneal margin and inject 4 minims of the solution, which, you see, causes a well-marked area of chemosis. strength of the solution has varied with different operators. Darier recommends 1 to 1000, and thinks the first dose should not exceed I division of a Pravaz syringe, or, in other words,  $\frac{1}{20}$  milligramme of the sublimate solution. The solution which I have just employed is 1 to 2000, and consequently, instead of injecting about 2 minims. I have used twice that quantity.

The next case that I show you is a boy with a large infiltrated ulcer of the lower margin of the cornea. This has probably started in a phlyctenule, but has been subject to a number of relapses, and I understand from Dr. Veasey that this is the fourth time that he has presented himself with a fresh exacerbation. He has not as yet received an injection, and, with the precautions previously described, I repeat what you saw me do in the other case.

Immediately following an injection of this character there is some smarting, which, however, soon passes away, and very few complications have been reported. These consist chiefly of pain when the point of the syringe is not sufficiently sharp, or when a subconjunctival nerve is punctured; of an ecchymosis, caused by the penetration of a small blood-vessel beneath the conjunctiva, which, you see, has happened in the left eye of the first case; and, finally, of the production of keratitis, or even hypopyon-keratitis, such, for example, as Darier

has described. The last-named accident could scarcely occur except by some fault in the technique,—probably imperfect sterilization of the instrument. Great care must be taken that everything is clean, and the best instrument to use is a Pravaz syringe, the needle of which is composed of platinum capped with iridium, so that it may be heated red hot before each injection. Naturally, after each injection there is considerable chemosis, which can scarcely be regarded as a complication.

The number of injections must depend upon the case. In moderately acute cases every second or third day is probably sufficient, and Darier formulates the rule that if no results are obtained after ten injections have been made, it is useless to pursue the treatment further. In chronic cases the duration of the treatment is necessarily prolonged, while in cases presenting very active lesions,—for instance, in a rapidly-infiltrating infective ulcer, or in a sympathetic ophthalmitis,—not only should the injections be more frequent, but the quantity of fluid should be as rapidly increased as is compatible with safety and with the amount of reaction which is produced.

Thus far I have quoted to you the favorable results, especially the reports given by those in France, who are warm advocates of the method. It is proper to state, however, that in the many discussions which have taken place upon this advance in ocular therapeutics, if it may be so denominated, more than one surgeon has raised a warning voice. For example, Despagnet and Vignes have doubted the efficacy of the drug in controlling, or even favorably modifying, so serious a disease as macular choroiditis. One warning is sounded even by the warmest advocates of the method,—namely, that it should never be used in cases of such character that there is circulatory stasis, rendering the absorption of the liquid either difficult or impossible. Under these circumstances the drug would simply lie beneath the conjunctiva and act as a foreign body. Therefore in acute iritis, no matter what its type, general medication is of the first importance, and evident indications for other means should not be neglected,for example, the use of atropine, or touching an ulcer with the galvano-cautery, or other stimulating application.

The experience of this clinic as to the efficacy of these injections is still a limited one. I have just shown you one case in which there is doubtful improvement. In another case of stubborn syphilitic plastic iritis, which has received several injections, the improvement has been surprising and prompt. One example of episcleritis treated with injections in the manner you have just witnessed, by myself and also by Drs. Phillips and Veasey, rapidly improved, after the ordinary methods had yielded indifferent results. At present, however, the disease appears stationary. It is possible that future injections may be more beneficial. young man under my care in another hospital for gonorrheal iritis—a disease which is singularly stubborn-has received three injections, two days apart, and has evidenced an improvement in his condition such as I have never seen occur in so short a time under any other method. Other cases which I might describe have not improved more rapidly than by the older and well-tried measures. I have had no experience that is worth quoting in combating the lesions visible only with the ophthalmoscope,-for example, macular choroiditis,-and I must confess that it is very difficult for me to be persuaded that much is to be expected under these circumstances. As I have already told you, however, Darier and other reporters claim very positive results.

Thus far I have spoken only of corrosive sublimate. Trichloride of iodine may be used in the same way, and also the cyanuret of mercury. In episcleritis, Snellen\* injected a solution of sublimate (1 to 5000), and found it of great advantage. Van Moll,† who reports excellent results in iritis and irido-cyclitis with subconjunctival injections of sublimate, has found injections of salicylate of sodium useful in scleritis. Darier, however, referring to the same drug, and also to the trichloride of iodine and other medicaments, gives his preference, without hesitation, to the bichloride of mercury.

With proper precautions, reasonable care not to increase the dose too rapidly, and judicious selection of cases, no harm accrues from the treatment, and if we may believe the reports to which I have so many times referred, very good effects have been produced,—effects which, in a limited experience, we have seen repeated in some instances in this clinic and in the Philadelphia Hospital. Except in a few cases, sufficient time has not yet elapsed to form an accurate opinion as to the ultimate value of these injections,—f.e., whether the good results which sometimes appear with surprising rapidity are permanent or not. Indeed, it has been intimated by some observers that

<sup>\* &</sup>quot;Transactions of the Ophthalmological Society of the United Kingdom," vol. x. p. 210.

<sup>†</sup> Klinische Monatsblätter für Augenheilkunde, October, 1892, p. 329.

the effects of the sublimate under these circumstances is temporary, and relapses are more likely to occur than when the mercurial influence has been secured by its introduction through the ordinary pathways. In order to satisfy ourselves upon these and other points connected with the method, we are now employing it systematically in all suitable cases. You shall hear the results at some future time, but the cases you have seen to-day serve to make you familiar with the very simple technique required to carry out the method.

PREVALENT ERRORS IN THE TREAT-MENT OF THE DISEASES OF WOMEN.

READ BEFORE THE MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA, MAY 16, 1893.

By G. Betton Massey, M.D., Philadelphia, Pa.

THE rôle of a critic is not a pleasing one to some of us, either readers or hearers, and I for one much prefer the position of a worker rather than a talker. The frequent recurrence of certain experiences, however, compels me to assume this character on this occasion in alluding to mistaken views and practices that have gained deep hold on the profession. The practice of medicine is, unfortunately, yet unable to adopt certain and exact rules of procedure in combating many affections, and the testing of its conclusions should rank side by side with original conceptions. Error bears the relation to truth that darkness bears to light, and in holding up a mirror to our failings we necessarily point to better paths. That the other path may be at times yet unexplored as to its end need not blind us to its desirability compared with the one we know to be bad.

I by no means desire to claim infallibility for the views about to be expressed. They are merely my explanation of the failure to cure, or of the harm that has occurred to, cases that have subsequently come under my personal observation.

The views and practices to which exception is taken may be divided into the current errors of gynæcologists and the erroneous views of gynæcology held by general practitioners.

Erroneous Views and Practices of Gynacological Specialists.—The slighter ailments of women rarely come under the attention of the gynacologist in private practice, though frequently encountered by those who discharge dispensary duties, and it is, therefore, not strange that the specialist should turn to physical means as remedies for cases that have al-

ready scaled the gamut of medicinal treatment. Though this is so, it is not necessary to accept the new gospel, that the pelvis of woman, unlike all other portions of human beings, is the exclusive domain of major surgery. This error becomes practically apparent whenever young girls are torn by the insertion of large specula in examinations; whenever the cervix is unnecessarily wounded by tenaculæ; when the uterus is dragged to the vulvar outlet for mere examination; when the sound is hastily passed into the uterus; and when fierce efforts to elicit pain or detect growths are made in bimanual examinations. The trained finger in an intelligent bimanual touch and palpation will replace all these harsh measures, as a rule, and render far better service.

When a diagnosis of a "displacement" has been made, it is an error to assume that the proper course to pursue is to correct the malposition by placing within the vagina a skeletal structure never contemplated by nature. The displacement has been caused by some other condition, and no true cure can result until that condition is first remedied. When fixation accompanies the malposition, only torture can result from the use of pessaries, while in movable organs certain relief is possible in some instances only at the cost of weakened supports and a postponed cure. The causal condition in most cases of displacement is an enlarged uterus due to catarrhal or other inflammatory processes, and a true restoration of health may be obtained by remedies that correct this primal trouble. The use of artificial support within the vagina should be reserved as a last resort for incurable cases.

When a diagnosis of dysmenorrhœa, or, as I prefer to call it, menorrhagia, has been made. it is an error to assume that the proper treatment is to dilate the cervix. The reflex action of this harsh remedy relieves some cases, it is true, though often temporarily, but the theory of obstruction on which it is founded has no basis in fact. The worst cases of obstruction leading to hæmatometra may exist without the production of cramps, and it has been demonstrated that the musculo-neurotic storm called dysmenorrhœa usually occurs with a temporarily dilated cervix and no accumulation within the uterus. The causes of this condition are ovarian congestion, lack of development, and neurasthenia. It is against reason that these causes should demand for their relief that the cervix and a part of the body of the uterus should be stretched and torn until an audible snap is heard. And how do these savants reconcile within their theories of stenosis the fact that they are unable to insert their large instruments for dilatation? A safe and sure remedy for menorrhagia is the galvanic current, and we can easily conceive its rationale to be the removal of the causes already enumerated.

An important error of the ultra-surgical gynæcologists is also the assumption that lacerations of the cervix cause the local suffering and reflex disturbances often found in cases where they The views of Emmett on this question have never been received and acted upon as generally abroad as in this country, but my best reason for believing that a repair of these lacerations will not cure the patients is the evidence almost daily encountered that it has not done so. The sufferings continue after the operation in a large proportion of the cases, demonstrating that the real lesion is a chronic metritis, and that a repair of the laceration will often not cure this lesion. Proof in support of this statement was presented to the Philadelphia Obstetrical Society some years ago, and elicited but slight discussion; but I was gratified to be told privately after the meeting by a well-known surgeon present that he was then engaged in trying to cure cases in which he had operated ten years before. Slight lacerations are compatible with perfect health, and, in my experience, deep ones unaccompanied by metritis demonstrate their presence only by the occurrence of miscarriages. These latter cases should of course be subjected to the operation for repair. As to the dangers to be feared from scar-tissue in the cervix, it may be said that irritative conditions may lead to carcinoma and require treatment, but healed scartissue is as harmless in this situation as elsewhere in the body. Scar-tissue, moreover, is also left after the operation.

But all these questions are usually consigned to the limbo of "tinkering" by certain surgeons practising as gynæcologists, who invariably and honestly find ovarian disease present in every case examined. Their first mistake may be in arriving at this diagnosis of ovarian disease, and I have elsewhere pointed out the ease with which uterine tenderness may be mistaken for ovarian tenderness.\* Ovarian disease of inflammatory type is, moreover, almost invariably preceded by uterine catarrhal disease, which is by no means latent when the usual diagnosis of salpingitis or ovaritis is made by the surgeon. Having made the mistake of attributing the patient's suffering wholly or mainly to

the uterine appendages rather than the uterus, the associated mistake follows of removing by abdominal section the slightly-inflamed ovaries and tubes, while leaving the more important seat of the disease as a source of continued misery. Scores of such cases have come under my own observation after these operations, and the statement is generally made by the patients that their condition was made worse by them. The performance of this operation of Tait's has become so fashionable of late that young men less than half a dozen years out of college often count their cases by the hundred. The gynæcological dispensaries of our large cities have become shambles, where women by the score are persuaded to undergo operations that are unwarranted by sound judgment, and the nature of which is not explained to them. . . . I shall not dwell at length on the extent of this error; it is already too well known to you; but many remark that the excellent opportunities thus afforded for special studies in vivisection are largely lost, for the reason that the operator's interest in the case too often ceases after he has made another entry in his triumphant list. Assuming that the immediate result has been recovery, it is of no interest to find out that death occurred from bowel adhesions a few weeks later, or that the continuance of uterine disease added to newly-created neuroses makes the woman a wreck for life. It is to be hoped that wiser counsels will shortly prevail in this field, and that these over-zealous oophorectomists will cease to regard ovarian disorders and ovaries as undeserving of the study and remedial care bestowed upon other portions of the body.

It is not a little surprising that many gynæcologists also still advise dangerous operations for the removal of benign fibroid tumors in the face of the well-attested value of electricity in . this affection. Since the father of this operation of hysterectomy (Keith) declared that he wished it were possible to undo those first fiftyodd successful operations and replace their bloody details by the Apostoli treatment, the advances in the application of electricity to the treatment of these tumors has made it possible to accomplish even more than Apostoli claimed, yet Keith's surgical followers persist in adhering to his older views, oblivious of this most striking change of heart. That certain cystic myomas and fibroids demand removal is unquestionably true, but there is no warrant in subjecting patients with interstitial, solid growths to this dangerous operation when a simple remedy will accomplish a practical cure. And it is by no means necessary to go to England or France

<sup>\*&</sup>quot; Metritis as an Initial Lesion in Pelvic Disease" ("Transactions of the Philadelphia County Medical Society," May 10, 1892).

for proof of the value of electricity in this affection. America is certainly not wanting when a question involving gynæcology and electricity requires solution.

The removal of ovaries to arrest the growth of fibroids is also an experimental operation of a magnitude and gravity totally unwarranted by the results. Where good could possibly come from it, the Apostoli method is best suited and most successful, and in the cystic and rapidly-growing myomas unfitted to electricity it is equally useless.

Finally, the views of certain specialists should be criticised, wherein they either regard electricity as a cure-all in gynæcology or expect it to produce its best results without the possession of special knowledge and skill on the part of the operator. No experience has demonstrated the permanent or comparative value of electricity in cystomas of the ovary, degenerating interstitial fibroids, purulent collections in the pelvis, or carcinomatous growths other than cervical cancer. These fields for abdominal section should remain unchallenged. also unreasonable to expect electricity to cure organic disease of the spinal cord manifested in certain pelvic neuralgias. The field for scientific application of electricity is already a vast one, but it requires the same adaptability, cultivation, and expertness for its prosecution as other special departments of medicine. Employing an agent that in its physical aspects presents the most startling changes and progressions now known to man, its medical capabilities cannot be lightly fathomed by surgeons or others who wish to test a popular mode of applying it merely because they see so much about it in the medical journals, and who look on at Apostoli's clinic for a day and then import an outfit, while yet ignorant of the elements of electro-therapeutics. The more delicate applications of electricity in gynæcology can only produce their best results at the hands of a skilled specialist, and he who begins his electro-therapeutic work by essaying it is like a workman who constructs a house without foundations.

Erroneous Views of Gynæcology among General Practitioners.—Referring to the erroneous views of gynæcology prevalent among general practitioners, it may be said that much of the preceding criticism is equally applicable to them, for the diseases of women are more actively treated by general practitioners than any other special disorders. An abandonment of the ultra-mechanical theories that have been criticised will result in a more useful devotion of the general practitioner to this class of his

cases, and fewer of his patients will be compelled to seek other advice. In the external and vaginal applications of electricity he will have a most useful remedy for the muscular and nervous relaxations so frequently found to be causative conditions in pelvic disease, not to specify other allied agencies the value of which I will not pause to affirm, and if he acquires the necessary knowledge and skill, the more direct treatment of catarrhal conditions will yield satisfactory results. Being free from an ambition to magnify his work into the fashionable operations of the day, he will be more patient and persevering than some have been.

Should, on the contrary, his work and inclinations lead him to pay scant attention to this study, his choice of a consultant should not be based on the erroneous view that gynæcology is synonymous with surgery. tions of pelvic disease with the nervous system are not entirely without the pelvis. There are mucous membranes, muscles, nerves, and nerveganglia within this cavity, the latter in such variety and profusion that it is scarcely less proper to confound gynæcology with neurology. A proper discrimination is easily made in the qualifications of the consultant in a given case. particularly since surgical gynæcology has narrowed itself so closely of late within the lines of amputation and exsection of parts and organs, a work that should follow rather than precede other rational therapeutic indications.

212 SOUTH FIFTEENTH STREET.

THE TREATMENT OF ACUTE BRON-CHITIS.

A CLINICAL LECTURE DELIVERED REFORE THE CLASS AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOS-PITAL, MARCH 16, 1893.

By REYNOLD W. WILCOX, M.D., LL.D.

REPORTED BY OSCAR G. HARRISON, M.D., PH.G.,
Instructor in Botany and Materia Medica, New York College of
Pharmacy; Clinical Assistant in General Medicine, New York
Post-Graduate Medical School and Hospital.

COMING here this morning some of the members of your class asked me if there was not something new in the treatment of acute bronchitis. I assured them of a new remedy, and promised to speak upon this subject to-day. Some years ago, when working in the physiological laboratory, I became interested in the class of remedies called expectorants, and performed numerous experiments upon cats and rabbits with members of this entire series, and so far as I was able to determine, with the exception of a very few, the

expectorant effect produced by these remedies is but an early stage of the emetic effect. In the case of the majority of these remedies and I can include for you in this list ammonium salts, senega, squills, antimony salts, ipecac, lobelia, and apomorphine—the distance between an expectorant and an emetic result is simply a question of dosage, and even that cannot be separated by definite figures, but, depending entirely upon the patient, the conditions necessitating modifications are per-With these conditions in mind, the ideal expectorant would be one in which the expectorant and emetic dose is most distantly separated. Previously this has been best obtained in apomorphine. From my laboratory experiments, before mentioned, I found that following an administration of apomorphine to cats and rabbits, an expectorant effect was produced; and upon opening the trachea half an hour after a hypodermic injection of this drug, it was found to be filled with frothy mucus, the mucous membrane pale, and the blood-vessels hardly visible. Acting upon the desire of Professor H. H. Rusby, of the New York College of Pharmacy, the noted botanist and traveller, I commenced about four years ago the clinical study of what was, at that time, a new drug, and accompanying my observations can be added those of Stewart, Mettler, Eckfeldt, and Shoemaker.

This is cocillana, the bark of cocillana Rusbyi, Britton, coming from South America. The preparation which I have used has been the fluid extract, in doses of from 5 to 25 minims, every three to six hours. I think the fluid extract preferable in many cases to a tincture because of the absence of alcohol. I am now experimenting with a syrup which contains all the active principles of the bark, excepting those which are removed by precipitation by water from an alcoholic solution. The dose of the syrup is from 1 to 2 fluidrachms every four to six hours.. The powdered bark, when given, produces nausea and a desire to vomit within about a half-hour, and lasting an hour, accompanied by an early discharge of mucus and followed by dryness of the throat. is with large doses a desire to defecate.

This symptom is by no means so well marked with the syrup as with the other preparations. This fact led me to believe that the resinoids extracted contained the purgative properties of the drug, and upon experimenting with this extractive portion I found it to possess a decided cathartic effect. The glands and vessels are stimulated, especially those of the mucous membrane of the bronchial tubes and of the

digestive system, this stimulation evidencing itself by increased secretion lasting for several hours

A hyperæmia of mucous membrane unaccompanied by secretion would be an indication for its use. The cases for which this remedy is useful are acute bronchitis, subacute and chronic, dry bronchitis, and chronic disease of pulmonary tissue. In these classes of cases there are reasons for the use of cocillana in preference to ipecac and apomorphine and many other expectorants.

With cocillana the expectorant effect is distant from the emetic effect, and can be depended upon to secure these results. When vomiting is produced from cocillana, it is because of injudicious use, for emesis was only produced from the syrup when 2 ounces had been taken at a single dose.

Cocillana requires from three to six hours in which to act, while apomorphine acts from within a half to one hour. Approximately the same difference is noted in the recovery from the effect of this drug, apomorphine passing off within two or three hours, requiring frequent doses, while the effect of cocillana, once established, persists for from four to six hours, this being a decided advantage. Cases of acute bronchitis seen within the first forty-eight hours are more quickly relieved by apomorphine, but in cases seen at a later period than this cocillana is to be preferred. With cocillana the appetite is increased, and if a laxative effect is secured, that is of advantage in acute bronchitis.

In cases of chronic bronchitis cocillana is of great advantage and more positive in its effects than either apomorphine or ipecacuanha. In cases of senile bronchitis it is contraindicated, for it may add to the bronchorrhœa so that it may become dangerous.

In chronic disease of the pulmonary tissue cocillana has a valuable field of usefulness, lique-fying secretion and relieving acute exacerbation. In conclusion, I believe that cocillana can fully replace ipecacuanha, which is now becoming expensive, and that it can be used with great advantage in place of apomorphine, carbonate of ammonia, strychnine, and those drugs classed as expectorants.

Next week, before the Brooklyn Medical Society, with Professor H. H. Rusby and Professor Virgil Coblentz, we shall give a collective study of cocillana, and you will then be able to secure the results of our observations of this drug in a more exhaustive presentment of the subject. The prescription that I use I will put upon the black-board,—

R. Extracti cocillanæ fluidi, Extracti lippiæ Mexicanæ, of each, f 3ss. M. Sig.—Thirty drops in a wineglass of water every four to six hours.

Gentlemen, I think I have had the pleasure of offering you something new, and thus have fulfilled my promise.

## TREATMENT OF DIABETES MELLITUS WITH SALOL.

DR. ARTHUR NICOLAIER reports the results obtained in the treatment of seven cases of diabetes mellitus with salol, in the *Therapeutische Monatshefte*, March, 1893.

In a fat diabetic from whose urine, previously under an antidiabetic diet, the sugar had disappeared and the other diabetic symptoms had improved, a very favorable result was obtained from the use of 30 grains of salol three times a day. The urine remained free from sugar for eight days under a mixed diet, the amount of urea diminished nearly onethird, the quantity of urine became normal in amount, and the increased thirst and weariness disappeared. After discontinuing the salol the urine remained free from sugar for nine days on a mixed diet, then the sugar returned and gradually increased, and so also did the excretion of urea. Nevertheless, eighteen days after the salol had been stopped, the amount of sugar was only one-third what it had been before the salol treatment.

In this case, also, the salicylate of sodium, in doses of 75 grains, proved active, but less so than salol. A second use of salol again caused disappearance of sugar from the urine and lessening of the amount of urea excreted.

In the same way, in a second and third case, salol proved effective in the dose of 90 grains a day. In the second case, also, a previous antidiabetic diet had caused the sugar to disappear from the urine, but it had reappeared when an error in diet had been committed, and then persisted in lessened amount in spite of a strict antidiabetic regimen. In the third case the antidiabetic diet availed only to lessen the amount of sugar to a moderate degree. both cases the salol, however, in a short time made the urine sugar free, but in the second case only transiently. In this case the increased excretion of urea and the intensity of the excretion of acetone were not lessened by the administration of salol.

In the fourth case the effect of the salol was favorable, but only transiently and incompletely, but the patient was on mixed diet. In the last three cases the salol was entirely without effect. In one of these an antidiabetic diet caused the sugar to disappear in a short time, while in another the sugar was lessened by the diet, but the quantity of urea was increased.

It is uncertain why salol is effective in some cases and fails completely in others. Nicolaier suggests its use especially when an antidiabetic regimen cannot be carried out. It is best given in capsules. Its use must be stopped if symptoms of intoxication—loss of appetite, nausea, vomiting, tinnitus, and albuminuria—appear. Albuminuria from nephritis is a contraindication to its use.

# THE TREATMENT OF CRETINISM BY HYPODERMIC INJECTIONS OF THYROID EXTRACT AND BY FEEDING WITH THYROID GLAND.

In the Lancet for March 18, 1893, CAR-MICHAEL reports a case of cretinism treated by hypodermic injections of thyroid extract and by feeding parts of the gland. He used 10 minims of the extract twice a week for six weeks. The mother noticed that the child was restless, irritable, and sleepless, and apparently worse. Accordingly he reduced the injection to 10 minims weekly, and after that to every two weeks; on three occasions allowed four weeks to intervene between the injections. He then ceased giving the hypodermic injections and began feeding with the raw gland, giving half a lobe at first, and then after two weeks one lobe per week. This, however, proved too much, as it disagreed with the child.

The result of the treatment was continuous improvement. Even after the first injections the appearance of the child changed to a daily decrease in size, the thick lips and nose became more normal, the skin was pliant and soft, and the growth of the hair more healthy. After a short time the child began to walk, and marked improvement in mental activity was manifest. A picture of the child before and nine months after treatment is shown by Carmichael, which certainly shows marvellous improvement, the treatment being six months by hypodermic injection and three months by feeding. During the nine months the child had grown fully four inches; the temperature still remains at about 97° F. He also states that he has two cases of myxœdema in adults which he has treated by injections and feeding, and that he has had wonderful improvement in these cases.

## The Therapeutic Gazette

## EDITED BY H. A. HARE, M.D., GENERAL THERAPEUTICS.

With special departments under the charge of G. E. DE SCHWEINITZ, M.D., OPHTHALMIC AND AURAL THERAPEUTICS, AND

EDWARD MARTIN, M.D., surgical and genito-urinary therapeutics.

#### GEO. S. DAVIS.

Medical Publisher, Box 470, DETROIT, MICH.

Philadelphia, 714 Filbert Street

OVIDGOD IDEA

SUBSCRIPTION RATES FOR 1893.
THERAPEUTIC GAZETTE (poetage included)\$2.00
THERAPEUTIC GAZETTE with MEDICAL AGE 2.50
THERAPEUTIC GAZETTE with WESTERN MEDICAL
Reporter 2.50
THERAPEUTIC GAZETTE with BULLETIN OF PHAR-
MACY 2.50
THERAPEUTIC GAZETTE with AMERICAN LANCET 3.25
THEPADEUTIC GAZETTE with ACR and I ANGET 400

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136 Gower Street, London. Price ros. Remittances may be made either by Postal Order or Stamps.

Price to Fereign Subscribers direct (postage included), \$2.50 (roshillings). English postage-stamps received on remittances.

Editorial communications should be addressed 222 South Fifteenth Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are coatributed to it exclusively.

Authors will receive reprints in pamphlet form, without charge, provided the request for them be written on the articles sent.

Business communications should be addressed to the Publishers.

#### Leading Articles.

## THE ADMINISTRATION OF CARDIAC STIMULANTS.

N leading articles in recent numbers of the THERAPEUTIC GAZETTE we have called attention to certain cardiac depressants in the treatment of diseases of the heart. Our attention has been called to the administration of cardiac stimulants in certain functional conditions of this organ by an editorial in the Boston Medical and Surgical Journal for March 30, In this editorial it is stated that there is a lack of good remedies to meet the indications furnished by the weak heart of pneumonia and febrile diseases in general. This is a statement which we do not believe is justifiable unless it is qualified. It is true that we do not possess cardiac stimulants which will do everything that we could desire, and we probably never will possess drugs which will carry out every indication that we would wish. We are inclined to think that in many instances the difficulty does not lie in there being a lack of proper medicaments, but rather in the fact that the physician does not apply them with as much thought as to their action as the necessities of the case require.

The first and most important point, we think, in the administration of a cardiac stimulant is to remember that the vaso-motor system, which governs the tonicity or tension of the bloodvessels, is quite as important a factor in the preservation of life as is the action of the heart itself. Those of the profession who are accustomed to listen at the præcordium, and to make careful examination of the condition of the heart in cases of disease, constantly meet with instances in which the pulse seems exceedingly feeble, and yet auscultation reveals a heart acting forcibly and with great rapidity; or, again, they find that the pulse is slower after digitalis has been given, that the heart is acting with great force, and that the radial pulse, while it may be slow. gives an unfavorable impression to the skilled touch, and consists in abortive waves, or large ones which flow languidly through a relaxed blood-vessel. If the digitalis has been given in overdose, there is produced that peculiar inco-ordination of the heart's action so characteristic of overdoses of this drug. The condition which we have spoken of can only be due to a relaxation of the blood-paths, with the result that the nutritive changes which should constantly go on between the blood in the capillaries and the tissues surrounding them are impaired. The heart is endeavoring unsuccessfully to fill blood-vessels which are too relaxed to offer normal resistance to cardiac action, and, as a result, this important muscle soon becomes exhausted because of excessive Under these circumstances the admineffort. istration of a good vaso-motor stimulant, such as belladonna or atropine, will dry the skin, disperse the symptoms of collapse, increase the tension in the radial pulse, slow the heart by increased resistance to the flow of blood from the ventricle into the arterial system, and, by establishing the normal condition of resistance in the blood-paths, will enable the heart to perform its function properly, to the benefit of the body, and with a better supply of blood to its own tissues through the coronary arteries. If digitalis is being administered with no good result, belladonna should be used every four hours, in the dose of 10 or 15 drops of the tincture, while the more slowly acting stimulant may be given in the dose of 10 to 20 drops every eight hours, or three times in the twentyfour.

In other instances the hypodermic injection of the grain of atropine will act equally well. In any event, as soon as the full physiological action of belladonna has been established, smaller doses may be employed, enough being used to keep the arteries in a proper condition, without the manifestation of other marked physiological symptoms of the action of this mydriatic. very important point in regard to the therapeutics of cardiac stimulants during the presence of pneumonia or other fevers is the fact that digitalis will rarely exert any beneficial influence while the temperature of the patient is as high as 102 or 103, and it frequently serves to do nothing but disorder the stomach if given at this time. In many instances the appearance of crisis is marked not only by the fall in temperature, but by the manifestation of cumulative action of the cardiac stimulant, so that for days after the temperature has fallen to the normal the slow characteristic pulse of digitalis persists.

In other instances where cardiac failure asserts itself in the course of pneumonia or other acute febrile processes it is sometimes forgotten that we need under such circumstances rapidlyacting drugs rather than those which require some time for their absorption and the exercise of their peculiar influence. To give digitalis or strophanthus in the face of impending cardiac failure during the period of crisis is hardly rational, though their influence is fairly permanent when it is once established. The time which is lost prior to their exercising their effect is often the most valuable. At such times the more diffusible rapidly-acting cardiac stimulants are indicated, and it is hardly necessary to say that of these ether or alcohol, hot and concentrated, or the aromatic spirits of ammonia fulfil the indications. If they are given, the physician should bear in mind the fact that they are fugacious in their action, and if their action is to be kept up for any length of time the dose must be frequently administered.

Another diffusible cardiac stimulant which is not resorted to as frequently under such circumstances as it deserves is Hoffman's anodyne, which has the advantage that it can be readily given hypodermically, while the ammonium preparations cannot be used in this way without the danger of a subsequent slough.

Far superior to all these remedies at such a time is strychnine, the dose of which should be generous if the physician has decided to employ it. There is little use in giving this drug by the mouth in such cases in doses of less than In grain; or, if by the hypodermic needle, of less than  $\frac{1}{10}$  grain. Frequently  $\frac{1}{10}$  grain is required to accomplish all that is necessary for the patient. Where the physician is not sure of the individual susceptibility of the patient, it may be wise to use  $\frac{1}{20}$  grain hypodermically every fifteen minutes until some sign of the action of the drug is manifested. Even with strychnine, which is at once a powerful stimulant to the heart, the respiration, and the vaso-motor system, it is frequently necessary to administer simultaneously atropine or belladonna, and there are very few instances of depression of the circulation in which a combination of belladonna or its alkaloid with a cardiac stimulant will not give better results than the employment of any single drug.

## SUBCONJUNCTIVAL INJECTIONS OF CORROSIVE SUBLIMATE.

OR the past year or two much attention has been directed to the use of subconjunctival injections of germicidal solutions in the treatment of a variety of ocular disorders. The testimony as to the value of this therapeutic measure has come in great part from French observers, and although, in the main, it has been favorable, all of the surgeons who have participated in the discussions upon this subject, particularly in the Society of Ophthalmology of Paris, have not been in entire accord. Recently, the editor of the Annales d' Oculistique, feeling that it was important to ascertain from the ophthalmologists of various countries their opinion of subconjunctival injections, has issued a circular letter propounding a series of questions, the answers to which are calculated to secure the needed information on this point; in short, he has undertaken a collective investigation inquiry, the object of which is to ascertain in what form these injections have been employed, in what character of cases, and with what results. This enterprise is most commendable, as it is eminently proper that every new method in ocular therapeutics which presents reasonable claims for attention should be carefully studied before it is recommended in the place of older and well-tried measures.

Darier (Annales d'Oculistique, April, 1893), starting with the proposition that a primary or secondary infection, when it is localized in so important an organ as the eye, is of the first importance, and that to stop the infectious process we should endeavor to ascertain the best possible means to exterminate it on the

spot, reviews the value of these subconjunctival injections of sublimate, and adds further data to those which he has already published strongly supporting their efficacy. Believing that the object of therapeutics directed towards the cure of localized infectious diseases is to secure the introduction into the affected territory of some antiseptic agent which may come in contact with the morbid process which is there implanted, the first point to be decided is, What is the best possible spot for the introduction of the drug? Evidently a germicidal solution may exercise its beneficial influence upon an eye by coming in contact with its coats, either by its instillation into the conjunctival cul-de-sac, or by its introduction beneath the conjunctiva, or, finally, by its injection directly into the capsule of Tenon. Darier's experience has convinced him that it is absolutely a matter of indifference whether the injection is made beneath the capsule of Tenon or simply under the conjunctiva. effect depends entirely upon the absorption of the drug, and this is equally rapid, no matter which of these two areas receives its influence.

From the time that Rothmund injected beneath the conjunctiva solutions of salt water for the purpose of dissipating opacities of the cornea, to the most recent subconjunctival injections of sublimate given to influence nutritive processes of the eye under a variety of circumstances, local ocular therapeutics of this character, in his opinion, are indicated whenever prompt and decisive action is required. In sympathetic ophthalmitis, for example, the chief treatment of which thus far has consisted of enucleation or of one of its substitutes, and a constitutional impression with mercury, no matter what theory we may accept of its origin, or what pathway we may believe the infectious process takes, the most potent results seem to him to have arisen from local therapeutics, and he bases his opinion not only upon his own experience, but upon that which rests upon the observations of Gallenga, Secondi, Raymond, Abadie, Coppez, and a number of other surgeons.

The indications for this treatment are described somewhat in the following manner: In the ordinary form of infectious ulcer of the cornea, subconjunctival injections of sublimate, made for several days in the neighborhood of the affected territory, produce effectual antisepsis. When these are associated with the use of the galvano-cautery, and the ulcer is taken in time, results are secured with a promptness and a surety that are not accorded by any other form of treatment. In

like manner septic wounds of the eye, when ocular suppuration is imminent, are favorably influenced by these injections, which may even prevent the necessity of enucleation. Corrosive sublimate introduced into the eye in this manner has been proved to be successful in irido-choroiditis, neuritis, and other serious affections the etiology of which is obscure, but especially in those which are under the influence of syphilis, rheumatism, and other diatheses; in short, in those cases in which the morbid process attacks particularly the uveal tract, because, as Pflüger has announced, the subconjunctival injections are said to have an elective action upon the choroid coat. the deeper structures of the eye are affected, for example, in central choroiditis and choroidoretinitis, and the process has not advanced too far,—the effect of this treatment, as Darier expresses it, may be mathematically measured, because the test-types prove its influence upon vision, and with the ophthalmoscope its power in dissipating the lesion is easily observed. When the optic nerves are affected, and have come under the influence of atrophy, not much result is to be expected; for example, in gray or tabetic atrophy there is no hope. In white atrophy, caused by former inflammatory process, an improvement may be slight; while in optic neuritis symptomatic of a serious intracranial affection, the effect of subconjunctival injections, if at all present, is purely ephemeral.

When we come to the various manifestations of syphilis upon the iris and the ciliary body, these injections yield their best results. Gummatous iritis is rapidly cured and chronic iridochoroiditis happily influenced, but acute, recent, and violent syphilitic iritis should receive general treatment, and the author believes the same to be true of every active inflammatory process of the iris and of the ciliary body, no matter what its etiology,—rheumatic, syphilitic, or otherwise.

Subconjunctival injections are contraindicated, at least for the time being, whenever a circulatory arrest renders the absorption of the medicament, on account of the obstructed lymphatic canals, either difficult or impossible. Under these circumstances the sublimate plays the part of an irritating body, more harmful than useful, causing acute pain and intense chemosis.

Having thus described in a general way the indications for the drug, Darier goes on to discuss the technique, the doses, and the complications. Very few instruments are required, but these should consist of a Pravaz syringe, the needle of which is composed of platinum

capped with iridium, very fine and sharp, so that the conjunctiva can be readily penetrated and without pain to the patient. Cocaine is first applied to the eve several times at intervals of a few minutes. When the anæsthesia is complete, the bulbar conjunctiva is seized with forceps eight millimetres from the corneal edge, and the desired quantity of liquid injected beneath a fold of it. Perfect antisepsis is required. The conjunctival cul-de-sac should be thoroughly cleansed with an antiseptic lotion, and the needle sterilized by heating it red hot before each injection. The strength of the solution has varied with different operators, the best one, according to Darier, being 1 to 1000, to which alcohol is never to be There is a certain amount of pain added. after the injection, particularly a peculiar burning sensation, which, however, does not last for any great length of time. Some ædema and chemosis follow each injection, varying according to the type of the disease, being greater if it is of such character that of itself it has embarrassed the intraocular circulation and impeded the absorption of the liquid. Sometimes, in addition to chemosis, the needle penetrates a small subconjunctival vein and an ecchymosis appears.

The usual dose of the solution already described is one division of a Pravaz syringe, or, in other words,  $\frac{1}{20}$  milligramme of corrosive sublimate. Each dose must be increased according to individual peculiarities and the virulence of the disease which is under treatment. Darier advises in serious traumatisms, or in malignant, infectious ulcers, the injection of a dose several times stronger than the one mentioned, to be repeated every day or two, and the same rule applies to sympathetic oph-Independently of these urgent thalmitis. cases, however, it is better to use small doses and to repeat them frequently. Beginning with one division of the syringe every two days, the quantity may be gradually increased according to the endurance of the patient.

Darier now comes to the important point of the duration of the treatment, stating that in acute cases he has often seen cure after several injections; but in chronic affections, as parenchymatous keratitis, disseminated choroiditis, chronic irido-choroiditis, etc., he has given as many as fifty or sixty subconjunctival injections. The length of treatment is regulated entirely by the results, and, as he has already pointed out, there is no organ in the body in which the results of medication can be so accurately ascertained as in the eye. In general terms, he suggests that, if after ten subcon-

junctival injections no good result has been obtained, it is useless to make further attempts.

Three germicidal solutions have been especially recommended in this treatment: first, corrosive sublimate; second, cyanuret of mercury; and, third, the trichloride of iodine. Of these three, Darier recommends corrosive sublimate and cyanuret of mercury, believing that trichloride of iodine is not superior to either of them. He has also made injections with the salicylate of sodium, iodide of potassium, distilled water, and glycerin, but with none of them has he obtained results comparable with those furnished by the bichloride of mercury.

There are few complications connected with the treatment. If the eye is properly prepared by antisepticizing the conjunctival cul-de-sac, and the needle sterilized by heating it red hot in the flame of a lamp, infection is unlikely, and the cases of hypopyon-keratitis which have been described must have been due to imperfections in the technique. The only complications of moment, and, indeed, they are of very little moment, are the pain produced by the possible puncture of a conjunctival nerve and the ecchymosis which may follow the injury of a subconjunctival vessel. Chemosis is present more or less constantly after each injection.

No doubt the investigation to which we have referred, and which has been undertaken by Valude to gather together the opinions of ophthalmologists all over the world as to the value of this treatment, will serve to give it its proper place in ocular therapeutics. Probably every surgeon who has tried it has been surprised at the extraordinary results obtained in a few cases; perhaps he has been equally disappointed in others. That it possesses a certain amount of value there can be no manner of doubt, but whether it will supplant older methods remains to be seen. That it should have a wide and universal trial is evident, because only by gathering together the views of unbiassed reporters, based upon large experience in widely diverse affections, can we come to any conclusion as to the exact value of the subconjunctival injections of antiseptic solutions, particularly of the bichloride of mercury.

THE TREATMENT OF SURGICAL TUBER-CULOSIS OF THE EXTREMITIES BY PASSIVE HYPERÆMIA.

IN a recent number of the THERAPEUTIC GAZETTE there appeared an article by Bier (Wien. Med. Blätter, cvi. Jahrgang, No. 17), giving his results in twenty cases of tuberculo-

sis involving the bones or soft parts of the extremities, treated by what he terms passive hyperæmia. His method consists in applying a pressure bandage to the limb involved up to the seat of tubercular swelling; just above the latter a constriction band is applied, and, when this is possible, the resulting passive hyperæmia at the seat of disease is kept up continually until all active signs of the tubercular disease disappear; then the constricting band is removed at night and passive motion is practised during the daytime. In case the fingers and toes are involved the constriction is placed about their roots, and is relieved only for a part of the day. After the disappearance of all symptoms of tubercular trouble and after cessation of the treatment there may remain a long-standing chronic ædema.

In all, Bier has now treated some forty-three cases of joint and bone tuberculosis, involvement of the glands, of the skin, and the subcutaneous tissues of lupus, and of tubercular infiltration of the testicle and epididymis. results in the last series of cases were quite as encouraging as in those first reported. quite typical of the majority may be taken the one heading Bier's record: A boy, aged eleven years, exhibited a spindle-formed swelling of the right elbow-joint. Fluctuation was distinct; the articulation was fixed at a right angle; there was pain on pressure. Passive hyperæmia was practised from the 15th of March to the 26th of April. The arm could then be almost completely straightened, though rotation was still limited. There was no pain. Passive hyperæmia was kept up during nights alone for two months more, massage being practised during the day. At the end of this time the elbow was completely functional. Motion was not limited, and the arm was as strong and freely movable as ever.

In some cases, of course, the treatment had to be supplemented by iodoform injections or by direct surgical intervention. The ultimate result was, however, good in nearly all.

The explanation as to the mechanism of cure in these cases can scarcely be considered as satisfactory. Bier believes that it is to be found in the fact that the increased amount of blood to the part encourages formation of fibrous tissue and by this means limitation of the infected areas.

Heller-Kiel advances the ingenious theory that by means of this method the toxic products of the bacilli are prevented from becoming disseminated, and hence reach sufficient concentration *in loco* to act fatally upon the germs which produce them.

Bier concludes as the result of his study that the efficacy of passive hyperæmia is quite as great as, and in recent non-suppurating cases much greater than, iodoform injections. The results in lupus were not favorable.

The whole research was apparently conducted in such a true scientific spirit, and the effects, both good and bad, are reported so conscientiously, that the favorable opinion advanced by Bier as to the effect of this treatment justify its trial at the hands of the general practitioner.

## THE HEALING OF INTRACAPSULAR FRACTURES.

LTHOUGH the classical paper of Senn, published some years since, proved, so far as clinical evidence goes, that intracapsular fractures of the neck of the femur at times undergo bony union, and also showed a rational and practicable method by which such union might be obtained, and though he collected some fifty-four cases in which such bony union had taken place, the position of the profession at large has practically remained unchanged on this question, the belief still obtaining that, given a purely intracapsular fracture, bony union is never possible. This belief dates back to Sir Astley Cooper, who originally held that the rule had no exception. Later, however, he conceded that in some cases bony union might take place.

Clinical evidence alone is not sufficient to prove the possibility of union in purely intracapsular fractures, since examination of the seat of fracture through the soft parts cannot absolutely exclude the existence of a fracture which is partly extracapsular.

Lowenstein recently presented before the Medical Society of Hamburg two preparations, each showing bony union in cases of intracapsular fracture.

Senn cites many such cases, and the postmortem evidence thus offered must be accepted as absolutely conclusive.

Gurlt and König both agree that the prognosis in intracapsular fracture is not absolutely hopeless, and the former author states that the differential diagnosis between intra- and extracapsular fracture really is of little moment, since either is to be treated with the object of securing bony union. The fact that impacted intracapsular fractures usually unite shows that the commonly-accepted belief as to non-union in these cases depending on insufficient vascularity of the parts for the formation of firm callus, and dilution of the plastic lymph with synovial fluid, thus preventing it from undergoing organization, is not well founded. Impaction can modify the healing process only in one way,-that is, it keeps the fragments in a fixed relation to each other during the healing process, an end accomplished by none of the forms of apparatus commonly employed in the treatment of this injury. Senn, after a careful study of the subject, devised a dressing which keeps the broken fragments closely opposed to each other, almost as well as when impaction occurs. This apparatus is essentially a plaster case fixing both thighs upon the pelvis, and provided with a pad which can be screwed down upon the trochanter major of the affected side, thus keeping the fragments in close appotion. As the plaster becomes loose the pad can be made to keep up the same pressure by turning a screw. The results as published from the use of this apparatus are most satisfactory. This method has never become popular, perhaps because the proper fixing of the plaster case is often difficult, and because the profession at large firmly holds to the belief that intracapsular fractures never unite, hence the application of an elaborate dressing would seem a waste of time and ingenuity. The post-mortem showings should, however, be accepted as conclusive; and should lead surgeons to treat intracapsular fractures as though bony union were the rule rather than the exception.

#### Reports on Therapeutic Progress.

# CONTRIBUTION TO THE CALOMEL TREATMENT OF LIVERDISEASES.

DR. PAUL PALMA reports from Von Jaksch's clinic (*Therapeutische Monatshefte*, March, 1893) some cases of liver-disease treated with calomel. He divides his cases into three groups: 1, disease of the liver with ascites; 2, disease of the liver without ascites; 3, secondary liver-disease.

In the first group he reports six cases of cirrhosis of the liver with dropsy. In four of these cases the calomel exerted a marked diuretic influence, the quantity of urine in one case increasing from 700 cubic centimetres to 6900 cubic centimetres. In two of the cases, however, in which the cirrhotic process had gone too far, there was no diuretic action. No complications but diarrhœa, which was easily controlled by opium, occurred, except in one case, in which a stomatitis, lasting a few days, developed.

Of the two cases belonging to the second group, one was hypertrophic cirrhosis and the other carcinoma of the gall-bladder with secondary cancer of the liver. No dropsy was present, and the urine was only very moderately increased under the use of calomel.

The only case in the third group was one of secondary carcinoma of the liver with atrophy, the cancer being primary in the pylorus. There was great dropsy, and the calomel exerted a powerful diuretic effect.

As to the dosage, it is most convenient to give for three days in succession three powders of three grains of calomel each, employing at the same time a gargle of chlorate of potassium.

#### CHLORIDE OF ETHYL.

DR. EDGAR GANS, of Carlsbad, refers to the experiments by Debove with methyl chloride as an anæsthetic, which acted by refrigeration of the part. Ethyl chloride, however, has proved more effective. It is a colorless fluid, with a pleasant ethereal odor, and boils at 50° F. It is prepared by treatment of alcohol with hydrochloric acid: C<sub>2</sub>H<sub>3</sub>OH + HCl = C<sub>2</sub>H<sub>3</sub>Cl + H<sub>2</sub>O. The hydroxyl of alcohol is, therefore, replaced by chlorine.

Chloride of ethyl is obtained for use in small closed glass tubes, one end of which is drawn out into a fine capillary tube. To anæsthetize a given surface, the extremity of the capillary tube is broken off, and as the ethyl chloride boils at 50° F., the heat of the hand is sufficient to force the fluid in a fine spray upon the desired part. The tubes contain about 2½ drachms, which usually is sufficient.

The effect of the spray is first to redden the skin, and then in about a minute to render it completely white. Then a coating of ice is formed in the shape of fine snow. Usually the tube is best held at a distance of about one foot (thirty centimetres) from the spot to be affected.

The remedy is free from disagreeable odor, and no threatening symptoms occurred in Gans's cases. A few nervous individuals experience a peculiar drawing in the extremities and a feeling of confusion, lasting a few seconds.

Gans experimented upon dogs in Professor Liebreich's laboratory, and proved that the remedy, under repeated use, does not produce thickening of the skin, scaling, or gangrene. In one dog, after the use of two tubes, a thermometer showed that the subcutaneous temperature was reduced to 15° to 18° C. (59° to 65° F.).

Gans refers briefly to a number of his cases in which the results obtained were remarkable. One was a case of supraorbital neuralgia, which had persisted for six weeks with the most violent pain. One application of the ethyl chloride cured it. In another there was neuralgia of the left mammary gland, which had resisted treatment for five months. The first application caused the pain to disappear completely, but it returned next day, whereupon the application of ethyl chloride was repeated daily for two weeks; the patient has been free from pain for ten months.

In a third case, one of lumbago, in a man sixty years old, who was unable to stand erect, one application appears to have worked a cure.

In three cases of beginning gouty attacks the ethyl chloride appeared to cut short the attack.

In several cases of migraine the pain ceased immediately after the employment of the ethyl chloride.

In a case of pruritus of the scrotum, in a diabetic forty years old, whose single subjective complaint for five years had been the persistent itching of the scrotum, a single use of ethyl chloride produced freedom from itching, lasting five weeks.

## THE OCCURRENCE OF PLUMBISM AMONG SAFETY ELECTRIC-LAMP WORKERS,

In the *Medical Press and Circular* for March 8, 1893, WILLIAM MURRELL, M.D., reports five cases of this artisan's disease.

It is well known that those who follow certain occupations frequently suffer from chronic lead-poisoning. House-painters are constant victims, and it would appear that in their case the lead gains entrance into the system in two ways,—by their neglect to wash their hands before taking food, and by inhaling the fine particles in the process of grinding the carbonate which forms the basis of most paints. Potters, whose duty it is to dip the pots into a solution containing lead in order to impart the necessary glaze to the ware, also suffer. It is, however, among lead-workers that the most pronounced examples of plumbism are met with. The producer of the raw material rarely experiences any initious effect, but the smelter, who is engaged in the process of converting the metallic lead into the carbonate, or white lead, readily falls a victim. Compositors at one time suffered largely from handling type-metal containing lead. Among the file-cutters of Sheffield lead-poisoning is very prevalent, and it apparently arises from the fact that the men use a cushion of lead on which to strike the file, much metallic dust being given off in the process. In the same way leather-cutters also suffer, the leather, while being cut and manipulated, being supported on a leaden slab. Japanners rarely escape, and it appears that the japanned articles are brushed over with colors containing lead. Cases are not uncommon among enamellers, the dust raised consisting of lead mixed with a little arsenic.

These sources of lead-poisoning are familiar enough to every student of the subject, but Dr. Murrell has recently come across an epidemic of lead-poisoning occurring in the course of an occupation which, so far as known, is not generally recognized as predisposing to plumbism,that is, the saturnism of electric-light workers. In hospital practice he has met with a good many of these cases, and was puzzled for some time as to their exact mode of origin. The men, when questioned respecting the nature of their work, were, for some reason best known to themselves, somewhat reticent, and were disinclined to afford much information. At last, however, he came across a victim who had a grievance against the company by whom he was employed, and was inclined to be com-The clue once obtained, the parmunicative. ticulars were extracted from the other patients without much difficulty. It appears that these people one and all were employed in the manufacture of plates used for batteries. These plates were not simple metallic plates, but were made artificially by mixing together red lead, silver sand, and nitric acid, and then casting the composition into moulds. In the process of mixing, the hands soon became covered with red lead, the effects of which on the health of the patients were soon apparent.

#### THREE CASES OF ATROPINE-POISONING.

C. BINZ (Centralblatt für Klinische Medicin, No. 2, 1893) reports three cases of poisoning by atropine, which, with others also cited, prove that morphine may be successfully used as an antidote for atropine. The first was a boy of seven years, who took a bottle of atropine drops intended to be used in the eyes. The prescription called for 4 grain in 160 minims of water, and he took all of this but a few drops. In a few moments he was wild, screaming, crying, laughing, rolling about, and with flaming face. The efforts to induce vomiting were fruitless, and 15 grains of tannin produced no effect. The raging condition continued undiminished for two days; then he became gradually more quiet, and on the fourth

day fell sound asleep and recovered. Nothing but the tannin was used in this case.

The second case was a three-year-old child, also poisoned by an atropine solution; the amount taken could not be learned. Poisoning occurred between 8 and o A.M., and the child was presented at the clinic towards noon. Its stomach was at once washed out. The child was very restless, tossing about, with twitching of the extremities, screaming and crying out; its pupils dilated, skin very red; it was perfectly wild, not recognizing its parents. subcutaneous injection of  $\frac{1}{20}$  grain hydrochlorate of morphine was given, without any quieting result. Fifteen minutes later a second dose of  $\frac{1}{12}$  grain was given, and the child was soon perfectly quiet and sleeping soundly. 5 P.M. the child had been awake an hour, and had enjoyed a drink of milk; but as he was still restless, a third dose of morphine, of the same quantity as the first, was given. followed soon, but no sleep. No further use of morphine was necessary, as the child gradually recovered.

The third case was that of a workman of fifty years, who had long suffered with sciatica. While in a terrible paroxysm of pain, his physician gave him by mistake, instead of morphine, an injection ( $\frac{1}{6}$  grain) of a one-per-cent. atropine solution. The patient was soon wild, but  $\frac{1}{12}$  grain of morphine given every hour gradually quieted him, and he then slept several hours. Except for great weariness, the patient was well the following day, and he has never had a return of his sciatica.

Binz does not consider morphine as suitable for use in every case, or at every stage of atropine-poisoning, but simply in the excited stage. Instead of morphine, chloral hydrate may be used, but as it weakens the heart more, it must be used with great caution.

#### FORMALIN.

In a reprint from the *Pharmaceut. Zeitung*, No. 22, 1893, Dr. J. Stahl declares that formalin is better adapted for disinfection than any other agent. Its power of annihilating microbes is extraordinarily great, resembling corrosive sublimate in this respect; but it is relatively non-poisonous, acting aggressively only against substances of an infectious nature, and leaving intact organic or inorganic substances with which it comes in contact. Finally, it is very easily handled and cheap, and these facts will secure for it the entrance into the practice of disinfection which it deserves.

A want which has been felt is therefore supplied: it might be designated as non-poisonous corrosive sublimate.

Formalin is to be preferred over corrosive sublimate not only as being non-poisonous, but also because it yields its gas readily and is nearly of the same specific gravity as the atmospheric air. The property of gaseous formalin of being absorbed by solid bodies and of being condensed as paraformaldehyde renders possible a self-acting deep penetration into the most hidden recesses, and under certain circumstances also a disinfection of places that have not been touched.

The possibilities of use which result from the properties already mentioned are so manifold that they can only be sketched here in bold outline.

For the disinfection of smooth walls, Stahl regards spraying with a half-per-cent. formalin solution sufficient. For a wall of fifty square metres, four-tenths of a litre of a half-per-cent. solution, or five grammes of a forty-per-cent. solution, are necessary. For the superficial disinfection of furniture, clothing, etc., he suggests spraying with a half-per-cent. solution. The spraying has to be carried out with the greatest possible energy.

Formalin is better adapted for steaming in closed spaces than carbolic acid, sulphurous acid, chlorine, or bromine, but whether in all cases with thorough results is yet to be proved. For the dry disinfection of more valuable objects in closed chests, such as furs, formalin will undoubtedly prove excellent, as well as for the preparation of sterilized aseptic dressings.

## IODOFORM INJECTIONS IN LOCAL TUBERCULOSIS.

WOOLSEY, in the New York Medical Journal for February 25, 1893, gives the following directions as to the employment of this method:

Technique.—As to the technique of the injections, it is of the utmost importance to observe thorough antiseptic precaution, and the emulsions should be freshly prepared, so as to contain no iodine, and sterilized. The choice lies between a large hypodermic injection with a large needle and a medium-sized trocar, and many prefer the trocar.

In the case of abscess, the contents are generally first evacuated, and then most surgeons wash out the cavity with Thiersch's solution or something similar; and, finally, the cavity is moderately filled with the iodoform emulsion, up to one hundred cubic centimetres being

used. This is repeated every one, two, or four weeks.

In the case of a joint, if abscess is present, the above-described procedure is adopted; if there is no pus, an injection is made into the cavity of the fungous joint, and the fluid is distributed by passive motion and massage. In both cases it is well to introduce the trocar obliquely to obviate leakage after removal.

In the case of a fistula, parenchymatous injections into the walls of the fistulous tract by means of a hypodermic needle are far more effective than mere injection into its lumen.

In the case of other tubercular processes, or in organs not hollow, parenchymatous injections are made unless abscess is present, when they are treated as above described. Fistulæ are injected every week with small amounts,—two to ten cubic centimetres in the wall, joints, and abscesses; every two to four weeks with larger amounts,—ten to fifty, or even to one hundred cubic centimetres.

In the case of joints, fixation is only necessary when there is pain,—i.e., in the early part of the treatment.

The later injections require more force, on account of the cicatricial contraction which has been and is going on. Krause gives very minute directions as to the place of puncture for the various joints of the body (Archiv für Klinische Chirurgie, vol. xli. p. 113).

Billroth's present method is different from the above, and combines operation and injection, as follows:

In the case of "cold abscesses," Billroth opens them up freely, scrapes off the abscess membrane with a tampon of iodoform gauze or large, sharp spoon, stops hemorrhage by tamponing for a time, sutures the wound tightly with sterilized silk (he lays great stress on its sterilization), and injects enough ten-per-cent. glycerin and iodoform emulsion to moderately fill the cavity. He recommends this method especially for caries of the ribs and in the extremities, and in children or adults under The division of the operation into two days (tamponing the first day) he thinks is objectionable. He adds that puncture and injection is still the best method for large congestion abscesses with caries of the vertebræ.

Cases Applicable.—The following classes of cases are applicable to this treatment, and in them it has been tried with more or less success:

- Tubercular abscesses from a focus in bone or soft parts.
- 2. Tubercular joint-disease, with or without abscess.

- 3. Tubercular fistulæ.
- 4. Tubercular epididymitis and tuberculosis of the bladder.
  - 5. Tubercular lymphadenitis.
- 6. Tubercular empyema, and even tuberculosis of the lung.

As to abscesses, this method is especially applicable to large deep abscesses not otherwise easily accessible, also when the patients are too feeble for a more severe procedure. It is also indicated to avoid scars. There is less unanimity of opinion as to abscesses near the surface and threatening to rupture. In the early days of this use of iodoform it was thought to be contraindicated in such cases, but not so now, except possibly where ether is used, and even then it is given as Verneuil's experience that healing is often quicker under these conditions when a sinus forms. The formation of a small sinus is no hinderance to the complete and speedy healing. It is the experience of Trendelenburg's clinic, in Bonn, that freshlydiseased parts, especially if acutely diseased, heal quickest and surest; that children give a better prognosis than adults, and that unaltered skin gives the best chances of success.

On the other hand, Billroth says that the worst and largest abscesses give the best results and fewest recurrences; therefore he is now in favor of active treatment of cold abscesses by this method, because of the danger of amyloid degeneration if they are not treated. His "open method" he also especially recommends in cases with fistulæ.

Krause treats the severest cases of joint-disease as well as the less severe, and both classes of cases show cures; though, as Bruns says as to *joint* cases, fresh cases without fistulæ, especially in children, are most favorable.

This method of treatment of empyema has been recommended by Rydgier and Bruns, especially if it be tubercular. Though but few cases of this kind have been so far reported, it seems likely to prove of great service in this worst class of cases of empyema.

Contraindications and Accidents.—Most all surgeons who have used this method report that they have seen no cases of iodoform-poisoning, and class this treatment as simple, successful, and without danger. Bruns reports iodoform-poisoning only once, and not at all in joint cases, where a less amount is always injected. Billroth saw iodoform intoxication very seldom, but advises not to increase the dose above that given above. In general the dose is small and the surface is not favorable for absorption, so that we would hardly expect iodoform-poisoning to occur often; and, in fact, no other re-

ports are given of it, but all others are careful to state that they have seen none. Krause reports one patient who died of acute general miliary tuberculosis three or four weeks after an abscess was opened and injected, also one patient died of phthisis, though the knee was improved. Such occasional results are met with in any form of operative treatment.

The only reaction after the injections is a rise in temperature of 1° to 2° C. Where it is more than this it has been attributed to imperfect sterilization of the emulsion. A part of the febrile rise has been attributed to the glycerin, but otherwise it has not been satisfactorily accounted for.

The time required by this method of treatment is rather long in actual days or weeks, though, as Fraenkel says, comparatively short. The procedure must generally be more or less often repeated. Some, however, report cures after a single injection, and others in four or five weeks by two or three injections. writer has cured one large abscess in four to five weeks by two injections. The general rule, however, is, that though the symptom of pain is quickly relieved, the healing process does not begin to show itself before five to six, or even seven or eight, weeks, after two to four injections, and then healing goes on rather rapidly, the complete cure requiring sometimes four to five months.

The deduction from this is not to stop treatment too soon, either from discouragement at first or belief that the case is healed later on.

Results.—The first effect is a moderate amount of pain, not lasting over twenty-four hours generally. Then there is usually a refilling of the abscess or joint-cavity, with more or less tension.

The first sign of improvement is the relief of the pain, especially in joint cases. Then there is almost always a decided improvement in the general condition. Thus, he has seen stoppage of night-sweats, disappearance of hectic fever, improvement of appetite, and gain of flesh and strength.

The abscess or joint cavity refills with a thinner, browner pus, which generally requires a second or third tapping and injection; but after a varying interval of two to eight weeks there is a gradual or rapid shrinkage, until only a certain amount of induration remains. Motion may return completely in a joint, though in the hip there is finally generally an anchylosis. In other joints many cases of complete restoration of motion have been reported.

The results are remarkable, especially as they occur in adults as well as in children, and in

cases where otherwise an amputation would have been the only operative treatment.

The results vary considerably among the various classes of cases to which the treatment is applicable.

Abscesses give by far the best results. Thus Fraenkel reports twenty cases with eighteen cures. Billroth gives sixty-three per cent. cured, and Trendelenburg finds a marked result in sixty-eight per cent. of cases. Bruns reports ten cures out of twelve abscesses from spinal caries, and twenty-four cures in thirty-five cases, whereas by former methods the statistics were thirty-five cures in a hundred and one cases. Finally, Bruns's most complete statistics show eighty per cent. of cures in cold abscesses.

Cases of fistulæ are more obstinate, and generally take longer. Cases of tubercular joint-disease show a smaller percentage of cures than do the abscesses, yet the results here are most remarkable, considering the kind of cases susceptible of cure and the results of other forms of treatment.

Bruns reports fifty per cent. of cures in all joint cases, and, by a re-examination of these cases, the cures are found to be permanent. The prognosis varies with the different joints. Thus, Krause reports cures as follows: Wrists, sixty per cent.; knees, forty-one per cent.; hip, thirty per cent.; ankle, sixteen per cent.; improvement in all cases. Trendelenburg's figures are: sixty per cent. of wrists, thirty-seven per cent. of elbows, thirty-three per cent. of knees and ankles.

It is thus seen that the best results are obtained in the wrist-joint, many cases being reported cured which would otherwise have been subjected to amputation. Next to the wrist, the knee and elbow show the best results and the ankle the worst.

### PÉRMANGANATE OF POTASSIUM AS AN EMMENAGOGUE AND UTERO-OVARIAN TONIC.

In the Journal de Médecine de Paris for April 23, 1893, HOVENT is quoted as administering permanganate of potassium as an emmenagogue and utero-ovarian tonic for five to eight days before the proper period of menstruation, but it should not be continued during the flow. The dose which he administers is ½ to 1 or 2 grains three or four times a day. In order to avoid any disorder of the stomach, the drug must be well diluted with water.

#### THE ADMINISTRATION OF MORPHINE BY THE RECTUM.

According to the Journal de Médecine de Paris, April 23, 1893, Condemin has found that the administration of from 1 to 3 cubic centimetres of morphine solution well up into the rectum is rapidly absorbed in from four to ten minutes. It is easily borne, and the action is long continued. He believes that in many instances this method of using morphine is better than using it hypodermically, because of the prolongation of its action, which he believes to be due to its escape into the blood of the general system without its being carried immediately to the liver, where it is partially destroyed.

## THE THERAPEUTICS OF PNEUMONIA IN CHILDREN.

DR. A. JACOBI, in the Archives of Pediatrics for April, has an article on the above. He divides pneumonia in children into the catarrhal or lobular, fibrinous or lobar, and the interstitial. About two-thirds are of the first, one-third belong to the second, and only a few to the third class. The lobular is almost always, and the lobar often, preceded by bronchial catarrh. Thus much can be done to prevent pneumonia by treating the bronchial trouble, and caution, at this period, against exposure.

Acute lobular pneumonia is less serious in the early stage than the lobar form, is not so likely to be complicated by pleurisy, and there is less risk of heart-failure. It runs a much longer course, however, and in this way the prognosis is uncertain. The great danger is from suffocation.

The interstitial form is very protracted, the fever is often high, the recovery rarely complete, there being generally induration and bronchiectasis.

In all these cases insist upon absolute quiet; exclude visitors, light, and noise; keep the room at 68° to 72° F., and the air moderately moist; let the patient select his own position; give liquid food, plenty of water or lemonade; keep the bowels free. The main dangers in acute pneumonia are high temperature, heartfailure, suffocation, which may result from either the lungs or the condition of the right side of the heart.

With regard to the high temperature, the writer lays much stress upon the fact that it is continued high temperature that is specially dangerous. Antipyretic treatment is not so urgently needed in those cases where there is a morning remission. The routine habit of de-

pressing all temperatures of 103° F. is bad. It is of more importance to watch the resistance of the system to these high temperatures. With regard to phenacetin, antipyrin, and acetanilid, they have oftener lowered temperature than saved life.

In all cases with remissions in the temperature, quinine is of great value; but it must be given during the remission. Some soluble form by the rectum is a good method. If quinine has to be used hypodermically, the best form is the carbamide. This dissolves in five parts of water, and does not cause local irritation.

The best of all antipyretics is cold. Most cases will do very well with sponging or friction with wet, cold towels. The rationale of cold bathing is that of cooling the surface. Blood is continuously coming to the surface, and in this way is being cooled. When the heart is weak and the extremities cold, no cold bath should be used. In such cases the cold bath drives the blood inward; the surface becomes colder, but the interior hotter. In these cases of cold extremities and hot interiors, a hot bath, instantly given, restores the circulation to the surface, and the temperature falls.

Weak, delicate, anæmic children do not stand the cold bath. For these cases the warm or tepid bath must take the place of the cold one. The bath can be gradually cooled down while the little patient is being rubbed. The warm packs may be used. When cold applications are used, it is sufficient to apply them to the anterior part of the chest.

Great care must be directed to the heart. In lobar pneumonia it is necessary to give stimulants at an earlier period than in the lobular form. All demand them at some time. This being the case, do not wait for heart-failure, but try to prevent it. With regard to alcoholic stimulants, the indications are not to use them in the early and acute stage of the disease, as by their use the labor of the lungs is increased. Further, the brain and kidney complications, which often exist, contraindicate the use of alcohol. Later on they are needed.

With regard to digitalis, give a large dose of from 1 grain to 4 grains, and repeat one or more times as needed. In this way the action of the drug is obtained in a few hours.

When the peripheral circulation fails and the pulse is small and weak, digitalis must be given, with some other drug, as nitro-glycerin,  $\frac{1}{600}$  to  $\frac{1}{100}$  grain; sodium nitrite,  $\frac{1}{10}$  to  $\frac{1}{2}$  grain; or tr. aconite, 1 minim, every hour or two hours, until the pulse is revived.

When the pulse is good, but the surface dusky and the nails blue, the nitrites will help

to restore the circulation. Leeching and the hot mustard bath may be used.

Strychnine may be given,  $\frac{1}{80}$  grain, during twenty-four hours, to a child of one year; ammon. carb.,  $\frac{1}{2}$  grain to 1 grain, every one or two hours.

During hepatization, when expectoration is insufficient, the inhalation of steam with a little turpentine in it is helpful. Camphor,  $\frac{1}{4}$  to 1 grain, aids expectoration. Ammonium chloride, 10 to 20 grains every few hours on a hot stovelid, fills the room with vapor and stimulates the bronchi. This is also the time to use the warm poultice or jacket of cotton wool.

Pleural pain is best relieved by sinapism, and constant hacking cough by small doses of opium.

The interstitial form, in the later stage, should be treated with iodide of potassium and digitalis internally, iodine externally. Pulmonary gymnastics must be kept up for a long time, even years.—Ontario Medical Journal, April, 1893.

#### THE TREATMENT OF TYPHOID FEVER.

In the Lancet for March 11, 1893, Dr. Latham contributes an interesting article upon the treatment of enteric fever, which forms the conclusion of a series of papers which he has published in previous numbers of the Lancet. The summary which he offers is so useful that we take pleasure in presenting it to the readers of the Therapeutic Gazette.

"First, if the patient comes under observation at an early period of the disease,—that is, during the first eight or ten days,-obviously the points to aim at would be to eliminate as many as possible of the bacilli from the intestine, to paralyze or attenuate such as remain, and to eliminate or neutralize the toxic material from the economy; if these objects can be attained the result would be either to cut short the disease or to abridge its future course and render it milder. In a great proportion of cases diarrhoea sets in early, but in some there is obstinate constipation, and the most severe cases I have seen have been those in which for two or three or four days at the commencement of the disorder no action of the bowels has taken place. From what has been previously stated this is quite intelligible. If diarrhœa exists, some portion of the toxic material generated by the bacillus is swept out of the body, together with numbers of the bacilli themselves. If, however, the bowels are confined, the whole of the toxic material is absorbed into the system, producing its deleterious effects, as shown by rapid rise of temperature, etc., the bacilli themselves increasing at the same time rapidly in number. The indication, then, at this stage is to eliminate the toxic material from the intestines by acting upon the bowels and using such antiseptic remedies as will powerfully affect the bacilli.

"Now among intestinal antiseptics calomel is probably the best. It materially retards decomposition due to low organisms, and its antiseptic power is not as greatly diminished by admixture with fæcal matters as is that of other antiseptics. From its insolubility it passes into the intestines, and so comes in direct contact with the parts where its action is most needed. putting a stop to the growth of the bacilli or attenuating their virulence. Here it may be remarked that it is no new thing to advocate the use of calomel in typhoid fever. Dr. Anthony Todd Thompson used to give it; Dr. Parkes considered it was to be strongly recommended in this disorder, given not later than the tenth or eleventh day, and at no time in large doses; 1 or 2 grains twice a day was enough. Wunderlich prescribed 1 to 5 grains twice daily, which Dr. Parkes considered too large a dose. Sir William Aitkin writes, 'In the great majority of cases where it can be given during the first week and before the occurrence of much diarrhœa the course of the disease is rendered milder and shorter.' But these high authorities gave it in order 'to influence the elimination from the intestinal glands by direct local action on the intestinal membrane.' The late Dr. George B. Wood, of Philadelphia, in his 'Practice of Medicine,' bears testimony to the benefit to be derived from mercury about the seventh or ninth day of the fever, and he held that 'it tends in some degree to arrest the progress of the disease in the glands of Peyer and to promote resolution of the inflamed patches.' What I suggest is that it acts beneficially by attenuating or arresting the development of the typhoid and other bacilli (Bienstock's bacillus, bacterium coli commune, etc.) in the intestines, and so removing the cause of the disease. The toxines of these bacilli have already been absorbed into the blood-stream; but they will soon be eliminated or possibly in some way, as yet not clearly made out, rendered innocuous if the further supply of them be cut off. By cutting short the disease I do not mean that the patient passes at once from a state of disease to that of health. That is impossible. But what I do mean is that the specific process—the development, that is, of the specific poison—is put a stop to. The swelling of the intestinal glands.

the congestion of the intestinal mucous membrane, and the swelling of the mesenteric glands associated with this specific poison have taken place, and, though the specific disease is cut short, these morbid conditions, which by themselves would give rise to pyrexia, diarrhea, etc., require some days before they pass away and the parts regain their normal states. It takes some days after the disease is cut short to repair the damage done by the poison.

"If, then, a patient comes under observation during the first week, and there is no diarrhœa, I would recommend the administration of 5 grains of calomel, the dose to be repeated the following day if not more than two copious evacuations are produced by the first dose. there be slight diarrhoa, a quarter of a grain, or half a grain, or a grain of opium may be added,-just sufficient to check excessive peristaltic action. If the opium stops this action altogether it will do harm. If diarrhœa is a marked symptom at the commencement of the disorder, or if violent meteorism, albuminuria, or great anæmia exists, I should discard the calomel and use one or other of the remedies to be referred to directly. Where calomel acts beneficially the temperature is reduced, the beneficial remission is persistent, and a considerable shortening of the whole febrile period takes place. The cases in which it has seemed to me to act most satisfactorily have been those in which its administration about the sixth or seventh day has been followed by three or four copious greenish evacuations, a lowering of the evening temperature from 104° or 104.5° to 103° F., and subsequently from the eleventh or twelfth day the evening temperature gradually declining until about the nineteenth or twentieth day it reaches a normal point. Liebermeister gave three or four 10-grain doses in the early stages of the disease, and was satisfied that he caused the attack to abort in a number of cases. I have never given such large doses. Further experience, however, may show their utility and indicate the conditions in which they may be safely employed. Still, it appears to me that when by the sixth or seventh day the evening temperature has reached 104° or 105° F., the damage done is so great that, though the typhoid bacilli are destroyed and the specific disease is cut short, yet, for the reasons I have already given, the patient's evening temperature will not reach the normal point earlier than the nineteenth or twentieth day. After giving one or two 5-grain doses of calomel, the remedy may be given on subsequent days in smaller quantities,—1 or 2 grains \_once or twice a day in combination with opium

and ipecacuanha,—endeavoring to adjust the quantity of opium so that there should be one, two, and certainly not more than three evacuations daily, and suspending the use of the opium at once if it paralyzes the peristaltic movement of the bowels and leads to increased tympanites. Or the following may be employed: From three to five grains of mercury with chalk, two grains of compound ipecacuanha powder, with a sufficient quantity of confection of roses as pills, or three grains of blue pill may be substituted for the gray powder.

"With regard to the effects of mercury in the treatment of continued fever, it must be borne in mind that in this disorder the gums do not readily take on the mercurial action. specific action must, however, be carefully looked for, and when symptoms of mercurialism appear the remedy must be suspended or given at longer intervals. As soon, also, as the evening temperature of the patient shows continuous daily remissions I should suspend the remedy or lessen the dose, according to circumstances. Upward of fifty years ago, Dr. Peter Mere Latham compared the mercurial treatment with different modes of practice in different cases of the same epidemic. 'Finding one season that his wards were full of fever, while yet its type was so mild that scarcely any died, he thought this a favorable opportunity for trying whether mercury had any beneficial operation upon the disease. Accordingly, he treated half his cases with small doses of mercury with chalk and the other half with the liquor ammoniæ acetatis and so forth, and no mercury, and he found that the patients in the first of these classes were, on the average, convalescent sooner than those in the last.'

"Ipecacuanha is a very useful addition to the mercury, as in small doses it retards the peristaltic action of the intestines and lessens the secretion from the mucous membrane. It may do more than this: the beneficial action of large doses in dysentery is very striking and has not as yet been explained. I am not at present prepared to express an opinion upon what was once the favorite practice with physicians, of giving an emetic of ipecacuanha at the onset of The mode of action of this drug in large doses, independently of its emetic action, requires further investigation. Sir Thomas Watson, in discussing the treatment of fever, says, 'Perhaps emetics may, in the present day, be too much neglected. I have no notion of their stopping the fever; but when given early, especially if gastric disturbance be a prominent symptom, they are sometimes followed by a marked abatement of many morbid sensations.

"It is astonishing," says the observant Sydenham, "how it happens that a vomit which does not produce either a large or a morbid discharge from the stomach should so materially relieve the nausea, restlessness, anxiety, and furred tongue of the patient."

"After the end of the second week of the disease constipation is to be carefully guarded against. The late Dr. Todd wrote, 'Restrain diarrhœa and hemorrhage in typhoid fever, and when you have fairly locked up the bowels keep them so . . . for four or six days, or even longer.' To carry out the latter suggestion is, I think, most prejudicial, and for two reasons. In the first place, there is allowed a greater absorption of the toxines from the alimentary canal, and it will generally be found that with constipation the temperature of the patient rises; in the second place, by allowing an accumulation of fæces, especially in the lower part of the ileum, the risk of perforation taking place is very materially increased; the intestine is put on the stretch, and if there be a deep ulcer the peritoneal covering may give way. In some animals, it will be recollected, it was only after the intestinal peristaltic action had been stopped that Seitz succeeded in producing typhoid fever. I think it best where there is a tendency to constipation to secure at least one daily evacuation, and, if by means of small doses of calomel or gray powder this is not effected, then to administer daily an enema of about half a pint of soap and water.

"If there be too copious or excessive diarrhoea this must be restrained, and the best remedies are the subnitrate of bismuth and tannic acid. The subnitrate of bismuth acts beneficially in two ways: first of all, it is a good antiseptic when brought in contact with the surface of substances, as is seen by its preventing any offensive discharge when sprinkled over fresh wounds.\* Owing to its insolubility, it exerts little antiseptic effect when added to liquids. Its antiseptic effect may be due in some measure to its slowly giving off nitric acid, which is an energetic bactericide; but it possesses also another special action in intestinal mischief. It was found by Gosselin and Heret,† from experiments made on rabbits, that the action of sulphuretted hydrogen in the intestines gives rise to violent peristalsis. If, then, this gas, as the result of the putrefactive changes, is present in excessive quantity in the intestines, on ad-

ministering a salt of bismuth the gas is readily absorbed by its forming sulphide of bismuth, and so the increased peristalsis subsides. subnitrate, when pure, has no irritant property, and can be administered internally in very large quantities without injury, though when applied in large quantities to external wounds so much may be absorbed as to cause poisoning, characterized by acute stomatitis, followed by intestinal catarrh, etc. The liquor bismuthi et ammoniæ citratis is also undoubtedly capable of acting as a violent gastro-intestinal irritant. In typhoid fever, therefore, the insoluble subnitrate alone should be used in doses of 15, 20, or 30 grains three or four times a day or oftener, according to circumstances. In tuberculous diarrhœa much larger doses are often given with the happiest results. gave as much in these cases as an ounce during the day. He says, 'In the last seven years during which I have administered the medicine in tuberculous diarrhœa, I have seen many persons who appeared to have but a few days to live cured of their diarrhoea, so far as to be able to take food, gain flesh and strength, and leave the hospital under an impression that they were cured.' In the diarrhoea of children who are being weaned or are fed artificially this remedy acts very satisfactorily, and the explanation of its action in all these cases must be sought for in its bactericidal properties.

"As stated in the first part of this paper, the addition of subnitrate of bismuth to various media seems not to stop the growth of the typhoid bacillus. It grows in them just as readily as in media to which .25 per cent. of carbolic acid has been added. It may be that the bismuth diminishes the virulence of the bacterium coli commune, the products of which. as has been already pointed out, may prepare the soil for the typhoid bacillus. This is a point on which further investigations are necessary and will be made. Of course it is very necessary in giving the remedy in large doses, especially in typhoid fever, to be quite certain that it contains no arsenic, an impurity which unfortunately exists in many specimens. Reinsch's test furnishes a rapid means for doing this.

"In tannic acid also we have a useful remedy in the diarrhœa of typhoid fever. It has no effect on the peristaltic movement of the bowels, but it diminishes the secretion from the glands, renders the fæces more consistent, and in large doses destroys the peculiar fæcal odor. It pos-

<sup>\*</sup> See Kocher, Volkmann's Klinische Vorträge, No.

<sup>†</sup> Centralblatt für die Medicinische Wissenschaft, 1886, p. 374.

<sup>†</sup> Bulletin de Thérapeutique, vol. iv. p. 267.

sesses bactericidal properties, and so checks putrefaction and removes unpleasant odors, but it is inferior in these respects to other agents, as strong solutions are necessary for the purpose. It may be given (best as pills) in doses of from 3 to 5 grains twice or three times a day, alternately, if necessary, with the subnitrate of bismuth, if there be excessive diarrhoea and tympanites. Where the latter is a prominent symptom at the end of the second or beginning of the third week of the disorder, the use of oil of turpentine is sometimes very serviceable. only does it lessen secretion from mucous membranes,\* but it puts a stop to putrefactive and fermentative processes. This may be due to the turpentine (C<sub>10</sub>H<sub>16</sub>) itself, but the bactericidal properties are intensified by the peroxide of hydrogen and the ozone which the oil, after exposure to air and light, is found to contain. The late Dr. George B. Wood, of Philadelphia, Dr. Graves, and Dr. Murchison have recommended this remedy. Dr. H. C. Wood says, 'There are two conditions or stages in which it is especially useful; indeed, is of incalculable service. About the end of the second week the tongue sometimes becomes very dry, red, chapped, perhaps coated in the centre with a brownish fur, and at the same time marked meteorism develops; 10 drops of turpentine every two hours during the day and every three hours during the night will in the majority of cases relieve the bad symptoms noted. . . . When convalescence is protracted, when there is a constant tendency to the recurrence of diarrhœa,—when, in other words, the ulcers of Peyer's patches are slow to heal,—turpentine acts almost as a specific.' † If albuminuria exists, however, the use of turpentine is contraindicated. Turpentine is also a most valuable remedy in intestinal hemorrhage. John Hunter was one of the first to recommend its use. He says, 'I have seen it immediately stop vomiting of blood from the stomach when all other means had failed; . . . it is the best, if not the only, styptic.'

"Another remedy which may be used with advantage in the second and later weeks of typhoid fever is  $\beta$ -naphthol. It is one of the most powerful antiseptic agents, possessing three times the strength of carbolic acid or iodoform and four times that of creosote, and, being almost insoluble, is one of the best agents for disinfection of the intestines. When administered in typhoid fever it deodorizes the stools, lessens

the tympanites, and renders the tongue moist. It may be given in doses of from 3 to 5 grains every two, four, or six hours, according to circumstances. If there be profuse diarrhoea, it may be given alternately with subnitrate of bismuth.

"Solution of chlorine is said to act beneficially when administered in this disorder, and its use has recently been strongly recommended by Boyd.‡ Sir Thomas Watson says, 'For some time past I have been in the habit of giving to all my fever patients a drachm of the chlorate of potassium dissolved in a pint of water as a daily drink. Without being able to tell you precisely in what respect, in what degree, or in what way this salt appears to do good, my own impression is strong that it does exercise some favorable influence upon the general character and course of the disorder.' I suggest that the beneficial effect is due to the decomposition of the salt, chlorine and peroxide of chlorine being liberated; and to promote this decomposition I recommend the addition of one drachm of dilute hydrochloric acid to be added to the solution.§ This remedy may be used alone or in conjunction with small doses of calomel, but not with any of the other remedies referred to in this paper.

"As regards antipyretics, such as phenacetin, antipyrin, etc., my experience does not allow me to place much reliance upon their use. Occasionally a single dose or two have appeared to act beneficially, but in most cases the reduction of temperature has soon been followed by a rise to a higher point than before. In fact, the remedy seems to be directed only against one particular symptom, and though the bodyheat is temporarily reduced, the typhoid poison, toxine, or what not, which causes this symptom is all the while accumulating in the blood, and produces its full effect in spite of the remedy. The hyperpyrexia must, however, be controlled, and cold sponging and the cold bath are, in my opinion, the most reliable means for doing so. Possibly during the reduction of the temperature some portion of the typhoid poison may be eliminated through the kidneys or the skin, and the condition of the patient improved. It seems to me that what we are most in want of just now is a remedy which will either promote the elimination of the typhoid poison from the blood through the usual channels or act as an antidote when injected into the blood. Possibly the serum of

<sup>\*</sup> Rossbach, "Festschrift der Medicinischen Facultät zu Würzburg," 1882, p. 42.

<sup>†</sup> H. C. Wood's "Therapeutics," p. 734, 1888.

<sup>†</sup> Lancet, March 26, 1892.

<sup>&</sup>amp; The decomposition is as follows: 4KClO<sub>3</sub> + 12HCl

 $<sup>= 4</sup>KCl + 6H_{a}O + 3ClO_{a} + Cl_{a}.$ 

immune animals may be shown to have those effects; at all events, the results of experiments made in this direction, alike with regard to typhoid fever, to diphtheria, and to tetanus, would lead us to hope that most important therapeutic agents are about to be brought into service for the treatment of these disorders.

"Lastly, a few words as to diet and stimulants. In my opinion the best food of all in typhoid fever is milk diluted with water, the dilution being carried only so far that no curd or undigested milk is to be seen in the evacua-Five ounces of milk with one or two of water may be given every two hours. To feed a patient oftener, unless there are special circumstances, is injudicious. A larger quantity of milk may be given if the patient seems to require it and if he can digest it. If necessary, the milk may be peptonized; perhaps in the later stages of the disease this may be called for, but in the earlier stages it is generally unnecessary. Soups and beef-tea are frequently given; but they are much less nutritious than milk, and not infrequently they tend to increase the diarrhœa. Now, though the typhoid bacillus can be cultivated in milk,\* other intestinal bacilli do not appear to thrive upon it; and in individuals fed exclusively on milk-children, for instance, at the breast—the fæces contain only the bacterium coli commune. Bienstock's bacillus—the bacillus putrificus coli—appears only when other kinds of animal diet are taken. A milk diet also, as it produces no irritating effects on the intestinal tract, may contribute less towards increasing the virulence of the bacterium coli commune than animal soups, etc., and perhaps herein lies the explanation of why the latter may be provocative of diarrhoea. This, also, may perhaps explain the reason why relapses are so readily brought about in cases of typhoid fever by the too early administration of solid or semi-solid animal food. Imperfectly digested, it may irritate the alimentary canal, and either the altered secretions or the undigested food itself may furnish material for increasing the virulence of the bacterium coli commune, the toxines of which then prepare the soil for reviving the attenuated and enfeebled typhoid bacilli, which are even at this time still tenanting the intestinal glands.† As regards the administration of alcohol in typhoid fever, it is unquestionable that many cases do extremely well without its aid, and unless its use is clearly indicated patients are better

without it. Alcohol is clearly indicated when there is prostration, with a feeble and soft pulse, the extremities cold, the tongue dry and brown, if there be stupor or low delirium, and especially if the impulse of the heart's apex is diminished and the first sound of the heart is feeble. Then a small dose of wine or spirit should be administered, the result watched, and the dose increased diminished, or discontinued, according to its effect. Long ago the following rules were laid down by Dr. Armstrong, and indorsed by Dr. Graves. as to the propriety of persevering in the admintering of wine in fever, and no better ones can be framed: '1. If the tongue become more dry and brown, it does harm; if it become moist, it does good. 2. If the pulse become quicker, it does harm; if it be rendered slower, it does good. 3. If the skin become hot and parched, it does harm; if it become more comfortably moist, it does good. 4. If the breathing become more hurried, it does harm; if it become more deep and slow, it does good. If the patient become more and more restless. it does harm; if he become more and more tranquil, it does good.'

"Such, then, are some of the remedies that appear to be useful in the treatment of typhoid fever. They are nearly all old remedies,—empirical,—their use suggested by the keen clinical observation and experience of the physicians of a by-gone age. The scientific investigations of the present day are now teaching us how to employ these same remedies with greater precision."

ON THE TREATMENT OF ANÆMIA AND CHLOROSIS BY THE CHIEF IRON PREPARATIONS COMMONLY IN USE.

In a paper with the above title, contributed by Dr. Andrew Smart in the *Lancet* for February 25, 1893, the following conclusions are reached:

1. Sulphate of Iron—Of the varieties of iron used in the trials here recorded, the best results have been obtained from the sulphate. This accords with previous experience. It is the preparation which undoubtedly possesses the greatest therapeutical activity, and the one which in the different varieties of the disease and constitutional differences of the anæmic patients may most uniformly be depended upon for satisfactory results. In anæmic patients who suffer markedly, as many of them do, from atonic dyspepsia, and in whom consequently the hydrochloric acid is either greatly

<sup>\*</sup> Wolfhügel and Riedel, loc. cit.

<sup>†</sup> Vide ante, Sanarelli.

deficient or absent, it is of great advantage to their recovery to prescribe from 15 to 25 minims of dilute hydrochloric acid shortly before meals, the iron salt being taken shortly after meals. But, on the contrary, to those patients whose stomach complaints are of an opposite nature, being due to excess of acid (pyrosis), acid in any form cannot be given; the substitution of 10 grains each of bicarbonate of sodium and carbonate of potassium before meals will be of material assistance to the stomach by inducing tolerance of the iron and thereby expediting recovery. In assigning the first place to the iron sulphate as a remedy, the physician should be guided by the whole of the circumstances connected with each of the cases in which the trials are made. As a remedy, it is exceedingly active in restoring the deficient corpuscles, alike in their number and character, and is also notably active in restoring the hæmoglobin in chlorosis.

- 2. Carbonate of Iron (Saccharine).—Numerous trials with this preparation were uniformly of a favorable character in the different types and stages of the disease in which it was given. It is invariably well tolerated, whatever be the nature of the dyspepsia from which the patient suffers. It was given in doses varying from 20 to 30 grains thrice daily during or immediately after meals. On these grounds he considers it entitled to rank as the second best therapeutic iron.
- 3. Protochloride of Iron.—This preparation was prescribed in the form of the syrup in 1-drachm doses thrice daily after meals. Each drachm of the syrup contained seven grains of the protochloride. As during its administration it repeatedly brought on nausea, and had consequently to be suspended for a time, it would be better to avoid this drawback by giving it at the commencement in smaller doses, increasing it gradually to the 1-drachm dose, as mentioned above. Making allowance for the delay caused in this way by the suspension of the remedy and its liability to induce intolerance, it is entitled to at least hold a third place in the grade of efficacy of these Recovery under its administration remedies. is otherwise in every respect satisfactory and complete.
- 4. Phosphate of iron yielded excellent results in only some of the patients treated by it, but in others it apparently failed, its effects being only appreciable after considerable protracted treatment. The beneficial character was apparent in those types of the disease in which there existed constitutional conditions allied to neuroses.

- 5. Iron Protoxide.—This iron in some cases yielded only negative results, but in other cases its effects were satisfactory. This difference in its effects may depend upon individual peculiarities of constitution. It cannot, therefore, as a remedy, be relied upon in all cases.
- 6. Arsenic.—This remedy when combined with iron is evidently useful as an alterative, but, as the result of the trials made with it as the sole remedy showed, it did not appear to exert any direct or appreciable effect on the renewal of the red blood-corpuscles and hæmoglobin in the cases of symptomatic anæmia and chlorosis in which it was tried. When, however, combined with an iron, especially the sulphate, it was apparent that the efficacy of the iron was enhanced by the combination.
- 7. In pernicious anæmia, however, it was well seen in one case that arsenic exerts a distinctly noticeable effect in promoting recovery alike of red blood-corpuscles and hæmoglobin. Although iron was long and freely exhibited in one case, no evident effects of a constructive kind were produced upon the corpuscles and hæmoglobin until arsenic was added to the treatment, and not even then until full doses (20 to 30 minims daily) had been continued for some time. It is, however, rare, and indeed exceptional, in pernicious anæmia, to be able to administer arsenic in almost any dose, except the smallest,—that is, only a few minims daily, -on account of extreme intolerance of it, so that in the majority of cases it is practically out of account as a remedy.
- 8. It is to be observed that in several of the cases referred to the red corpuscles numerically exceeded—in some instances by 2,000,000 per cubic millimetre—the usual standard of 5,000,000. This excess having been found repeatedly, the author is led to believe that by the treatment being continued a similar result would have been obtained in most, if not in all, the cases. It would appear from this discrepancy that an estimation of red corpuscles at 5,000,000 per cubic millimetre is too low a standard.
- 9. On the other hand, speaking with reference to the hæmoglobin, Smart observes that he has never yet succeeded in raising the hæmoglobin to a standard of one hundred per cent. The highest obtained has never exceeded ninety per cent., and that amount only in instances of exceptionally robust health. His experience, therefore, leads him to believe that eighty per cent. is a good health standard; and that seventy per cent, or even under, may be taken as a fair average estimate at which patients may be discharged from hospital treatment, pro-

vided that the red cells are over 4,000,000 per cubic millimetre. It would appear from these results that our views in regard to the relative estimation of the red corpuscles and hæmoglobin require to be modified in accordance with these trials.

10. He has repeatedly had occasion to notice certain differences between symptomatic anæmia and chlorosis, which he believes have not heretofore been referred to, but which are of importance as diagnostic signs. In the former, the red cells and hæmoglobin do not bear the same definite relation to one another in their decrease and increase which may be observed in symptomatic anæmia. several times recorded cases of advanced chlorosis in which there was present a high numerical standard of red corpuscles (over 5,000,000 per cubic millimetre), while at the same time the hæmoglobin did not exceed twenty-five per Such cases might not improperly be designated hæmoglobin anæmia, in the same sense that we speak of a pernicious anæmia as corpuscular. The low standard of hæmoglobin in chlorosis represents the chief pathological feature in that disease as do the reduced numbers and defective morphological characters of the red globules in pernicious anæmia. In consequence of the comparatively slow recuperation of the hæmoglobin in chlorosis, the recovery of these cases is longer delayed than in those of symptomatic anæmia, and, besides this, there is observed in the red globules a decided proclivity to undergo morphological degeneration. These special differences lead us to regard chlorosis pathologically as a graver type of anæmia than symptomatic anæmia, although at the same time it specifically differs from the pernicious kind.

11. The author again reverts to the very severe type of anæmia referred to at the outset as being under treatment by hydrochloric acid as the sole therapeutic remedy. Many anæmias doubtless originate in defects of the primary gastric digestion caused by either deficiency or complete absence of free hydrochloric acid in the stomach, the consequence of which is that the proteids not undergoing normal metamorphosis are largely thrown out of the system as waste and lost. This method of treatment by hydrochloric acid can only be of use in cases in which there is present that condition of atonic dyspepsia in which the hydrochloric acid is markedly deficient or entirely absent. This type of atonic dyspepsia is characteristic of a large number of anæmias at the commencement of as well as throughout their entire course. During the forty-two days

the patient was under treatment by hydrochloric acid the red corpuscles increased from 2,500,000 per cubic millimetre to 4,200,000 per cubic millimetre, and during that long period the hæmoglobin only rose from thirty per cent. to thirty-six per cent. The patient at this stage of incomplete treatment left the hospital of her own accord. It was evident, however, that, while longer-continued treatment would have raised the corpuscles to 5,000,000 per cubic millimetre, it would not have materially increased the hæmoglobin from the low standard at which it had apparently become stationary. The result of this clinical experiment, as that of every other, proves that iron in some form is absolutely indispensable in the treatment of chlorosis, as well as of symptomatic anæmia, to effect complete recovery.

12. In each of the anæmias here recorded there coexisted chronic constipation, and the urine in each case yielded the roseate color, with nitric acid, referred to by McMunn in his "Chemistry of the Urine" as an indication of the destruction of red blood-cells. To what extent, if at all, this color reaction indicates blood destruction through the agency of reabsorbed toxic materials from the prima via, as Sir Andrew Clark suggested, remains to be determined by further investigation.

The following anatomical and pathological distinctions have been suggested in the course of these trials as marking off diagnostic differences between the three grades of anæmia: 1. In symptomatic anæmia there exists a constant proportional relation between the number of red corpuscles and the amount of hæmoglobin. They diminish relatively during the course of the disease and increase relatively during recovery, the iron being deficient as to the whole blood and each cell relatively. 2. In chlorosis the relation between the number of red corpuscles and the hæmoglobin is entirely The hæmoglobin is markedly deficient relatively to each cell and to the whole blood. The low relative amount of hæmoglobin is the chief pathological determining feature in chlorosis, and points to the low amount of iron, which, in this type of the disease, is par excellence to be regarded as the specific remedy in its treatment. 3. In pernicious anæmia the normal relation between the red cells and the The iron is in hæmoglobin is also disturbed. excess in each cell and also in proportion to the whole blood. The great diminution in the number of red corpuscles and the great relative excess of the hæmoglobin in relation to these and to the whole blood are the distinguishing features in this anæmia, so that, as chlorosis may

be regarded as a hæmoglobin anæmia, pernicious anæmia may be viewed as a red corpuscular anæmia, that being the chief point of distinction between them. The excess of iron present in the blood of pernicious anæmia plainly contraindicates its employment in the treatment of that disease, except in small quantities, as an alterative. Arsenic (Fowler's solution), when tolerated and continued by a patient suffering under pernicious anæmia, is the preferable remedy. It is, however, only borne in certain cases, and in every case the toleration of it is to be acquired by giving it in small doses at the beginning and gradually increasing it. Quinine is markedly useful in that group of pernicious anæmias in which there is splenic enlargement, and its beneficial effects are enhanced when combined with moderate doses of iron. The best drug in such a case is the citrate of iron and quinine given in full doses. Smart's recent experiences in connection with the treatment of pernicious anæmia by the transfusion of healthy blood is leading him to attach much importance to that mode of treatment.

# THE USE OF NERIUM OLEANDER AS A CARDIAC TONIC.

OEFELE (Revue Internationale de Bibliographie Médicale, April 10, 1893) has employed nerium oleander in seventy-five cases, consisting of valvular diseases of the heart following rheumatism, fatty degeneration of the heart, nephritis with cardiac phenomena, arhythmia, and nervous palpitation.

As a general rule, he found that nerium oleander has similar effects to digitalis. Toxic symptoms are very rare, but sometimes nausea, with a tendency to vomiting, diarrhœa, and other disagreeable gastro-intestinal symptoms, manifest themselves after full doses of the tincture.

The action of the drug is rapidly manifested, lasts for a considerable time, and consists in the slowing of the pulse, which becomes more regular and strong. The respirations are less rapid. The flow of urine is abundant, and there is also an increase in excretive matters in it. The drug does not produce constipation, but, on the other hand, seems to promote it. Palpitation disappears, and with it the cedema and dyspnea; finally, the organism becomes accustomed to the drug, and it is necessary to increase the dose.

The diuretic properties of oleander have been found to be very energetic. It certainly provokes peristaltic action of the intestines and

stimulates the blood-vessels. Oleander is, therefore, indicated in affections of the heart and kidneys, particularly in the complications of a rapid pulse which is irregular and feeble, where palpitation, cedema, or dyspncea is present, and it acts as well in young subjects as in older ones. It is also of value in affections of the myocardium and atheroma of the blood-vessels.

It is contraindicated in the presence of diarrhœa and vomiting. The author has administered oleander for as long a period without stopping as twenty-five days, and in one case for forty-seven days, with short intervals with small doses. The effect of the drug passes away about ten to fourteen days after it is stopped. The dose which he considers large is 7 grains a day. Frequently, however, 2 to 3 grains are sufficient. A very active preparation, preferable in many instances, is the infusion of the fruit, which is the most toxic part of the plant. For prolonged use, a tincture in the strength of ten per cent. is perhaps the best preparation, and 10 to 20 drops of this preparation may be given two to three times daily. A powder of the flowers may be given in the dose of 1 to 3 grains in twenty-four hours.

### THE VALUE OF ANÆSTHETICS IN LABOR.

In the Philadelphia *Polyclinic* for April 15, 1893, Dr. E. P. Davis contributes an article on this interesting subject.

It would seem that a statement beyond dispute is that the use of anæsthetics is clearly indicated in the majority of cases of labor. If anæsthetics are agents designed to relieve pain, it is difficult to conceive of a condition more appropriate for their use than is labor. The physical and mental distress which frequently accompanies this physiological function certainly demands the employment of agents similar to those which relieve the patient of suffering during a surgical operation. The prejudice against the use of anæsthetics in labor is a remnant of the old superstition which taught that it was wrong to interfere with natural suffering, a belief fortunately long since abandoned.

Many shrink from the use of anæsthetics through fear of the depressing influence of those agents upon the action of the heart and their supposed influence in promoting post-partum hemorrhage. To those who are not experienced in diagnosis, the rapid, small pulse of an excessively nervous patient seems a contraindication to the employment of an anæs-

thetic, the inference being that such a pulse is indicative of a diseased heart. If physical examination of the heart be made in these cases, there is generally found no evidence of valvular disorder or extensive pathological lesions of the heart-muscle. When such a pulse is accompanied by the hysterical globus and protestations on the part of the patient that sudden exertion or fright causes embarrassed respiration, the casual observer may be deceived.

Even in cases where valvular lesions are present in pregnant women, an anæsthetic has been shown to be a most efficient aid in promoting speedy and successful labor. If we recall the physiology of labor, we obtain a rational indication for the use of anæsthetics. The nervous supply of the uterus is such that this organ is capable of acting in a rhythmical and efficient manner without the direct stimulation of voluntary impulse; on the other hand, the action of the uterine muscle may be inhibited by severe mental impressions, whether of pain, anxiety, or surprise occasioned by an unexpected happening.

The cessation of labor pains following the arrival of an unknown and unexpected physician or the entrance of a strange nurse into the patient's room is a familiar example of this inhibitory action of the cerebrum. A further example is found in the cessation of labor pains in nervous patients who suffer exceedingly during labor. The word pain must here be employed in its usual meaning of conscious suffering, and not with reference to uterine contractions. In these cases the conscious suffering or pain experienced by the patient is so great that cerebral inhibition temporarily stops the contractions of the uterus. It will, therefore, be observed that an agent which temporarily removes the inhibitory action of the cerebrum leaves the ganglionic centres of the spinal cord free to furnish the uterus with the normal stimulation essential for rhythmical contraction of the uterine muscle.

In prolonged and difficult labor some of the greatest dangers which threaten the mother and child may be lessened by the skilful use of anæsthetics. The element of shock may be thus lessened or prevented. Exhaustion of the uterine muscle, the greatest predisposition to hemorrhage, is far less frequent when anæsthetics are properly employed. Injurious pressure upon the child less often occurs when the forces of labor are regulated and controlled by partial anæsthesia. The facility afforded in diagnosis and operative treatment by the physician following the use of an anæsthetic is a fact too familiar to require discussion.

The disadvantages of anæsthetics-namely, their depressing influence and tendency to favor post-partum hemorrhage-depend upon the method of their use. If pushed to complete and profound anæsthesia, the patient, of course, is depressed, the uterus will contract imperfectly, and serious complications may be directly caused or induced. But this is no more true in the practice of obstetrics than in the practice of surgery. The careless administration of an anæsthetic during a surgical operation may result in a condition of depression which may oblige the surgeon to temporarily discontinue the operation; oozing and secondary hemorrhage are favored by such improper anæsthesia, and certainly the surgeon does not abstain from the employment of anæsthetics because their improper use complicates his practice.

A further, although less important, advantage gained by the use of anæsthetics during labor is the diminished tendency to laceration and injury to the birth-canal of the mother. It is often possible to so conduct a patient's delivery as to avoid extensive injury by the relaxing effects of an anæsthetic. In addition, at the moment of delivery the patient may be kept in a manageable state and spared the suffering incident to the termination of labor.

In prolonged and difficult cases of labor where no great disproportion exists between the pelvis and the fœtus, an anæsthetic will often prevent the necessity for the use of forceps. This may be considered a disadvantage to the physician, as diminishing the opportunities for the exercise of his operative skill and hence lessening his revenue from practice, but, in the interests of mother and child, the advantage to them is considerable. An illustration of our meaning may be found in the following case:

A multigravida of deficient muscular and bony development, but of highly-nervous organization, was found to have a pelvis symmetrically contracted in all its diameters; the fœtus was in normal presentation and position, -namely, its back to the mother's left side, its head presenting at the brim of the pelvis. The history of previous confinements showed that the usual increase in the size of the second and third children had been observed, the present pregnancy being the fourth. Six weeks before confinement the patient was carefully examined by pelvimetry, palpation, and auscultation. It was then found possible to bring the head to engage by gentle pressure at the brim of the pelvis. A prognosis of possible spontaneous labor was made, and the pregnancy allowed to go to term. The first stage of labor was of considerable length, its exact duration not being ascertained, as the patient concealed the occurrence of labor pains. Early in the second stage of labor the head engaged at the brim of the pelvis, but its descent was delayed. The element of conscious suffering was very considerable, and seemed to inhibit the best action of the uterus. The patient naturally assumed a sitting or semi-sitting posture until fatigue compelled her to lie down. Chloroform was then inhaled at the beginning of each pain, under which the pains became strong and efficient, and the head passed the pelvis brim without especial difficulty. A few pains brought the birth of the child, and the subsequent course of the labor was without incident.

While the child was passing the brim of the pelvis, pressure was made above the pubes downward and backward upon the fœtal head, and the uterus was roused to contraction by gentle friction. The uterus contracted vigorously after delivery, the patient suffering from after-pains for a considerable time. It was thought that possibly clots had accumulated in the uterus, causing the after-pains, and hot antiseptic douches were given to remove such clots, but they proved to be absent, and the lochial discharge was normal in character. Examination of the child showed that its head was proportionate in size to the mother's pelvis, its diameters corresponding very closely to those ascertained by pelvimetry.

We have in this account of what is apparently a normal labor certain pathological factors of direct practical interest: First is the contracted pelvis, whose diameters, although slightly lessened, were yet sufficiently reduced to seriously interfere with the course of labor and increase its dangers. In addition, there was present a marked deficiency in muscular development, accompanied by an abnormally sensitive nervous system, which predisposed to muscular exhaustion and its accompanying complications. Then, as a factor influencing the patient's mental condition, we had the dread of labor and fear of anæsthesia resulting from a diagnosis incorrectly made by a former medical adviser of cardiac disease, and hence danger in the use of an anæsthetic. The combination was certainly sufficient to have occasioned serious complications during labor. We believe that the scale between normal and complicated labor was turned by the careful use of the anæsthetic, and have no doubt that the experience of others amply bears out our own in this direction.

In the more serious complications of labor, requiring operative procedures, discrimination must be made in the selection of an anæsthetic: thus. Dr. Davis prefers chloroform in the performance of version, in the delivery of a placenta retained by spasmodic contractions of the uterus, and in any condition in which a well-marked contraction-ring threatens uterine rupture. On the other hand, in the usual employment of the forceps in dealing with postpartum hemorrhage, where interference is necessary and an anæsthetic required, and in abdominal section for the complications of parturition, he prefers the administration of ether. These conclusions are the result of experience and close observation, and are not arrived at from purely theoretical considerations of the action of these various agents.

#### ASPIDOSPERMINE IN DYSPNŒA.

BARDET (Revue Internationale de Bibliographie Médicale, April 10, 1893) has made some clinical studies of quebracho aspidosperma in the treatment of dyspnœa. The plant aspidosperma occurs in commerce in a number of forms, and it is uncertain as to which is the proper form to employ. It very distinctly increases the fulness of the movements of respiration, slows the heart, and depresses the temperature. The blood of animals poisoned by it becomes red.

Bouchard has found the drug very valuable in the treatment of ordinary functional dyspnoea. The dose is from ½ to ½ grain, or even as much as I grain, or a solution may be given hypodermically, as follows: Aspidospermine, 3 grains; water, 3 drachms. To this solution may be added a small percentage of sulphuric acid to maintain its solubility, and the acid may be neutralized at the moment of injection with a little bicarbonate of sodium. 15 drops of this solution is the ordinary dose for hpodermic use.

# THE HYPODERMIC INJECTION OF ICHTHYOL.

Damiens, in a Paris thesis, highly recommends the employment of ichthyol hypodermically, and states that it possesses under these circumstances analgesic properties, as there is, in addition to the absorption of the swelling, a suppression of the pain. Particularly is this of value in cases of neuralgic pains associated with inflammatory processes which have caused exudations. It is hardly necessary to add that hypodermic injections of

ichthyol are not equal in analgesic power to hypodermic injections of morphine, but they are very much more innocuous.—Revue Internationale de Bibliographie Médicale, February 10, 1893.

NOTES ON ARSENICAL NEURITIS FOL-LOWING THE USE OF FOWLER'S SOLUTION.

In the *Montreal Medical Journal* for April, 1893, Dr. WILLIAM OSLER publishes the following interesting note:

He states that during the first few years of practice he was in the habit of using arsenic somewhat sparingly, but after the appearance of Bramwell's paper in 1877, on the use of this drug in pernicious anæmia, he began, in the cases which came under his observation, to use it more freely, and since that time in various forms of anæmia, in leukæmia, in Hodgkin's disease, and chorea minor he has used it in what might be called large doses. His rule has been to begin with 2 or 3 minims three times a day, and gradually increase the dose every four or five days until the patient took 10, 15, or 20 minims of Fowler's solution three times a day. He preferred to see the physiological effects, either itching of the skin, slight œdema, an attack of vomiting, or diarrhœa. The quantity which will induce these symptoms varies in different individuals, and in the anæmia cases those who bear the drug best seem to improve the most rapidly. The largest doses he has ever given were in a case of pernicious anæmia, in which the patient had taken during his primary attack, with the greatest benefit for several weeks, 20 minims of Fowler's solution three times a day; and had reached in his relapse 30 minims three times a day, when, at the end of a week, he had an attack of itching of the eyelids and cedema over the eyebrows.

In the chorea minor of children, who, as is well known, stand arsenic well, it is a common experience to find that 12 and 15 minims of the liquor arsenicalis may be given daily without ill effects. Until two years ago, though Dr. Osler had often seen the symptoms of saturation above referred to, he had never seen any serious toxic symptoms referable to the nervous system, but he had at that time in the ward a patient with pernicious anæmia who had taken for a long time large doses of Fowler's solution, and under its use had feelings of numbness and tingling in the feet and legs, which was thought might be due to arsenic. This may not have been so, however, since these advanced cases not infrequently have sclerosis of the posterior columns of the cord, in connection with which loss of the knee-jerk and sensory changes in the legs may develop. Osler has repeatedly in his clinics and ward class talks referred to the apparent harmlessness, so far as his experience went, of Fowler's solution.

On October 25, 1892, the patient was admitted to the author's wards with Hodgkin's disease, the cervical, axillary, and inguinal groups of glands being involved. Having had under observation for nearly four years a case of this disease which has been remarkably benefited by the prolonged use of Fowler's solution taken at intervals, he was naturally placed upon the same drug. The details of his case, so far as they relate to the lymphatic disorder, do not concern us. The arsenic was begun on October 27, given as Fowler's solution, and gradually increased. He took it on the first occasion for ten days; it was then resumed on November 14, and in two weeks the dose reached 15 minims three times a day. Towards the end of November it was noted that his skin, which was naturally of a somewhat dark color, had a much deeper tint, and that of the abdomen was very distinctly bronzed. Throughout the month of December he did not do well. The arsenic was stopped on the 10th and begun again on the 27th. From the outset the patient had had that interesting feature in many cases of Hodgkin's disease,—an intermittent pyrexia,—and, as may be seen by his last temperature chart, rises occur every afternoon and evening to about 104° F. The pigmentation seemed to increase throughout December. Twice during the first two months of his stay in hospital there was slight diarrhoea, which was attributed to the About the middle of January it was noticed that he was tender to the touch and walked somewhat stiffly. He is a Pole, speaking no English, and, as there was no one in the ward to interpret for him, these symptoms did not perhaps at first attract the attention they The most striking feature at this deserved. time was the sensitiveness on pressure. The skin itself did not appear to be painful, but if, for example, the arm was grasped, or the pectoral muscle lifted, or the thigh pinched, he winced and tears came into his eyes. By the end of January he walked with much difficulty, and could scarcely go from his bed to the closet. He has naturally, in the course of his disease, wasted a good deal, but the legs seem to have become distinctly more flabby within the past three weeks or so. The knee-jerks, which were present on January 10, are now absent.

On February 2, Dr. Hoch reported the faradic excitability of the nerves of the leg was diminished, the galvanic also to a slight extent. In the muscles the diminution to both currents was more marked, and the contraction following the galvanic stimulation was decidedly slower, and the anode, if not larger, was at least equal to the K. C. C. The muscular power in the arms is not so strikingly diminished, though the grasp is feeble in comparison with what it was. The hypersensitiveness of the muscles does not appear to be at all diminished.

Between the 27th of October and the 10th of Ianuary this patient took four ounces one drachm eighteen minims of the liquor potassæ arsenitis, equivalent to about sixteen and a half grains of arsenious acid. During these seventy-five days there were fourteen days in which the drug was omitted. The marked sensory changes, the gradual impairment of muscular power, and the progressive character of the symptoms indicate very clearly the peripheral and neuritic nature of the affection; and though he has a chronic cachexia, in which, as in cancer or tuberculosis, neuritis might develop, yet it seems more rational to attribute it to the somewhat prolonged use of the arsenic, more particularly as he has had also another striking feature of arsenical poisoning,namely, pigmentation of the skin.

Arsenical neuritis from accidental poisoning is not very uncommon. Less commonly it results from accidental contamination in certain occupations. It is claimed by Folsom, Putnam, and others in Boston that cases may be of "domestic origin,"—that is, due to absorption of extremely small quantities of arsenic with the dust from wall-papers, carpets, or curtains. Cases such as the one reported in this paper, in which the toxic symptoms have developed in consequence of the administration of arsenic as a medicine, are in reality extremely rare. A few years ago Dr. J. J. Putnam collected a series of cases in which serious poisonous effects had followed the long-continued use of medicinal doses. A majority of them cannot be said to be very satisfactory, as the reports are imperfect as to the amount taken and as to the symptoms. Among the cases referred to are, however, some which would indicate very clearly that the prolonged use of even moderate doses may cause symptoms of a widespread neuritis. Individual idiosyncrasy plays, no doubt, an important rôle; tolerance may, as a rule, be established, as with the Styrian arsenic-eaters, but such cases as the one reported show that we must be on our guard in the protracted administration of the drug.

#### TOL YPYRIN.

PAUL GUTTMANN (Berliner Klinische Wochenschrift, No 11) describes the new remedy tolypyrin, which resembles antipyrin, but is cheaper.

The tolypyrin forms colorless crystals, which melt at from 107° to 108° F., and have a very bitter taste. They are soluble in about ten parts of water, are readily taken up by alcohol, and are almost insoluble in ether.

Like antipyrin, the fluid solution of tolypyrin becomes of an intense red color when chloride of iron is added to it; upon the addition of nitrous acid it becomes green. If the amount of tolypyrin which can be held upon a knifepoint be heated with two cubic centimetres of twenty-five-per-cent. nitric acid the fluid becomes wine color. By the addition of ammonia this color will be changed to bright yellow.

After testing tolypyrin carefully on rabbits and then upon healthy persons, Dr. Guttmann was ready to test its supposed antipyretic action upon patients with high fever. This he did in six cases of typhoid fever, five cases of pneumonia, two cases each of facial erysipelas, scarlatina, and phthisis, and in one case each of septicæmia, otitis media, and gangrene of the scrotum with high fever.

The tests were always begun at noon, and the temperature was taken every hour until night, and then every two hours.

The result was the following: One drachm of tolypyrin, given in four hourly doses of 15 grains each, lowered the temperature at least 1½° C., usually about 2° C. and over. A few times it was lowered as much as 3° and 3.5° C., and once 3.7° C. was reached. This diminution of temperature began in the first hour and continued from five to six hours, when, the lowest point having been reached and the action being removed, a gradual rise in temperature occurred. This was usually so gradual that the original temperature was not regained until the following morning. So that by one drachm of tolypyrin the temperature may be kept at a lower point during from twelve to eighteen hours, if the use of the remedy is begun at noon. The fall in temperature is accompanied by the secretion of sweat on the body, especially on the face, but there is no trace of chilliness when the temperature rises

The frequency of the pulse corresponds with the course of the temperature.

The amount and duration of the lessened temperature is just as great as that of antipyrin. In treating five cases Guttmann used first tolypyrin and then antipyrin some days later. In each case the action of the tolypyrin was slightly the stronger. There are no unpleasant symptoms connected with its use, although in rare cases vomiting may occur after one of the hourly powders.

He also tested tolypyrin as an antirheumatic and an antineuralgic; here, too, the results were excellent. For headache he found it equally valuable with antipyrin.

As tolypyrin is cheaper than antipyrin, while equally helpful as antipyretic, antirheumatic, and antineuralgic, it is to be preferred.

### THE EFFECT OF HYPODERMIC INJEC-TIONS OF BORAX IN ACUTE PNEUMONIA.

In one of the Polish journals, Dr. RUNEBERG gives a report of five cases of acute pneumonia treated by the hypodermic injection of borax in the medical clinic of Helsingfors, and claims a marked modification in the duration and progress of the disease.—Revue Internationale de Bibliographie Médicale, April 10, 1893.

### THE TREATMENT OF SCIATICA.

In the London Lancet for April 15, 1893, DR. E. VALENTINE GIBSON gives the analysis of one thousand cases of sciatica, with special reference to one hundred cases, treated by acupuncture. The results on discharge from the hospital of one hundred consecutive cases of sciatica treated by acupuncture are as follows: Fifty-six per cent. were cured, thirtytwo per cent. were much improved, ten per cent. were improved, and in two per cent. there was no improvement. These results are satisfactory, considering the chronic nature and the severity of the majority of the cases. All these were treated by acupuncture, and they all used the Buxton thermal water, which has such a great reputation for the absorption of inflammatory products. Acupuncture the author considers very valuable. Dr. Gowers states, "Simple acupuncture along the course of the nerve has been recommended; it gives temporary relief, as does any superficial pain, but the cases are very few in which it has a permanent effect." The writer believes that Dr. Gowers refers to cutaneous acupuncture and not to acupuncture of the nerve itself, which was the method employed in these cases. The patient can always tell when the nerve has been pierced by pain shooting down the leg. The needles ought not to be left in situ for any length of time, but withdrawn immediately, as unless this is done severe pain is often caused on their withdrawal, and no better results seem to follow this line of treatment. A single spearpointed needle two and a half inches long is all that is required, as the depth of tissue to be pierced can be regulated according to the situation and the development of the patient. If the nerve is not pierced on the first introduction of the needle, it can be partially withdrawn and entered again at a somewhat different angle, and in this way the nerve may be pierced in several different places with but one cutaneous puncture. The nerve should be pierced about five times over the parts where there is pain on pressure. The external popliteal nerve to the inner side of the biceps tendon may also be pierced if it is painful, and as it is not covered by muscle, this can easily be done. There is often pain situated on the outer side of the leg, which in all cases is probably due to "referred pain." The musculocutaneous nerve may be punctured along the whole of its course, but being of small size and lying deeply, it is naturally more difficult to pierce; but, even if the nerve is missed, the needle, passing in close proximity, must exert counter-irritation. These cases, without exception, he considers were due to an inflamma-\ tion of the nerve-sheath, this affecting primarily the adventitious tissue, and in more severe cases spreading into the interstitial tissues,-a perineuritis and an interstitial neuritis respectively. This condition would account for the various symptoms, sensory and trophic, such as pain, tingling sensations, and the wasting of muscles supplied by the affected nerve, and also those supplied by the small sciatic, when the disease affects the lower portion of the sacral plexus.

The author, in view of his lack of opportunities for post-mortem examination, quotes from Dr. Gowers: "In most cases that have been examined distinct evidence of neuritis has been found, chiefly involving the nervesheath, but extending in some cases into the interstitial tissue. In recent cases there are small hemorrhages, and in seven cases similar, but slighter, alterations in the interstitial tissue with secondary damage to the nerve-fibres. The signs of inflammation are most intense at the sciatic notch and opposite the middle of the thigh. They may be limited to one or both of these places, or they may be greatest there and extend in slighter degree over a considerable tract of nerve." Considering this to be the true pathology of sciatica, the treatment by acupuncture is a rational one, more especially in the earlier stages of the disease; but even in the later stages puncturing the thick-

ened nerve-sheath may promote absorption. If the nerve is pierced in a number of places over the inflamed area, where there is congestion of vessels and consequently exudation of serum and small-celled infiltration, it must be given an outlet, however small, to more or less of the exudation; also dilated blood-vessels must be pierced, thus relieving tension in two ways and favoring the process of absorption. Rest is necessarily most essential, as it is in other inflammatory conditions. A rheumatic or gouty diathesis should be treated by appropriate remedies, as they are often a predisposing cause. The more chronic the sciatica is the more difficult is the cure, as organization of the effused material must be a source of irritation and a nidus for subsequent relapses. cases of secondary sciatica due to rheumatoid arthritis of the hip-joint, a slight temporary relief only is obtained by acupuncture, as the source of the irritation cannot be eliminated. Whether this irritation is due to pressure of the enlarged capsule of the joint on the nerve or to the changes in the joint, giving rise to a neuritis of the nerve-fibres supplying the joint, and spreading from there to the trunk of the sciatic nerve, is a point requiring investigation.

In conclusion, if every case of sciatica, beginning acutely or subacutely, were to be treated by absolute rest, together with acupuncture, repeated, if necessary, at intervals of a few days, and at the same time any rheumatic or gouty tendency were treated by suitable remedies, the author does not think there would be the number of chronic and relapsing cases that one so often sees.

# ON THE ADMINISTRATION OF CARBOLIC ACID.

In the *British Medical Journal* for February 18, 1893, Dr. Wiglesworth, of Liverpool, makes the following remarks:

The Dose.—The amount suggested by Dr. Charteris he considers to be too small if given for zymotic disease, and finds the following to be average doses, according to age: One year old, I grain; from that up to ten, I 1/2 to 2 grains; for youths, 2 1/2 to 3 grains; for adults, 3 to 5 grains. Owing to a dispenser's mistake, he found that 7 grains produced irritant vomiting and purging, which ceased immediately on the dose being reduced to 3 1/2 grains (four doses had been given, one every four hours, instead of half the quantity every two hours).

Frequency of Administration.—The author's idea was to "carbolize" the patient, and with

this view he gave a dose every two hours night and day, because carbolic acid is a very unstable compound, and enters into chemical combination with almost every substance with which it comes in contact, and is rapidly oxidized. From a series of observations, extending over hundreds of cases, he concluded that when the urine had been rendered black by its administration, and kept so, the object had been obtained, for when thus altered it may often be kept weeks without any appreciable decomposition taking place. At first he feared the changing of the urine's color denoted altered blood, but repeated examinations failed to detect a trace of blood even after the largest doses had been administered. Dr. Charteris terms this coloring-matter hydrochinon. as the author obtained this colored urine when using pure phenol, he surmises it must be due to the increased quantity administered and not altogether to impurity.

Vomiting.—He has never known carbolic acid to produce vomiting, except in the case of the excessive dose referred to,—7 grains. Indeed, in the vomiting of pregnancy, he considers this remedy efficient above all others in checking this troublesome complication. every other drug, it is not infallible, but it is the first he administers, and generally in 2-grain doses. In bilious vomiting it is singularly efficacious. It is possible that there may be something in the method of preparing it for administration. He prescribes with the mixture a few drops of spirits of chloroform, and either tincture of cardamoms or orangepeel to flavor it. Syrup is plentifully used, and water to make up an eight-ounce mixture. Of this one tablespoonful is ordered, to which is to be added two or more of water. In this way an agreeable fluid drink is made, freely partaken of by both children and adults. Only one instance is recorded by the author in which a child refused to take it; but as all medicine was equally refused, this is of little account. He believes if a mixture so prepared is ordered in the future, and careful observations made, it will be found that vomiting will be allayed rather than excited by its administration; indeed, it is difficult to see from what cause vomiting should arise, for in these doses -1 to 5 grains freely diluted-it acts more as a sedative than an irritant. It is quite clear that in pills it might cause vomiting, or rather that the pills caused vomiting, for retching is often excited by swallowing even bread pills.

Effects on Temperature.—I do not think that carbolic acid per se has any effect in lowering temperature.

Its Use in Zymotic Diseases.—If given in doses of 4 to 5 grains every two hours in the initial stage of puerperal septicæmia, it generally stamps it out in from twenty-four to thirty-six hours, and in the later stages, combined with the administration of quinine in alternate doses, it is most effectual. In cases of apprehended puerperal septicæmia he commences its administration within twelve hours of completed labor, with great success.

As a Prophylactic in Scarlet Fever.—Whenever a case of scarlet fever originates, he at once puts all those in the house who have not had the fever on carbolic acid,—2-grain doses twice a day. In a large number of cases the outbreak has been confined to the one first affected, and if any others have subsequently taken it, the attack has been singularly mild. The following is a good illustration:

On November 4 a child, aged ten, took a severe attack of scarlet fever, when all the other children—one older, four younger—except the baby, eighteen months old, took 2 grains of carbolic acid twice daily. In four days another child was taken ill, but the attack was much milder. The mother mixed promiscuously among them. The baby was unavoidably in the sick-room much of the day and during the whole night. At the end of three weeks, while desquamation was active, the baby took the scarlet fever, but in such a modified form that it could be scarcely said to be ill; the rash was transient, and she was well in a week. was no desquamation in her case. None of the other three children have taken it. took the acid until the house was disinfected.

In conclusion, he states that after twelve years' experience he knows of no therapeutic agent to equal it in efficiency, and has never seen any untoward result arise from its careful use.

He suggests that the spores of the pathogenic microbe which produce scarlet fever have either a feeble investing membrane or are peculiarly sensitive to the influence of carbolic acid; hence they are rendered incapable of vigorous multiplication, each succeeding generation becoming more attenuated. Therefore, when transferred even to fresh pastures, they are too feeble for active development, and a mild attack is the result.

THE EFFECT ON SUCKLINGS OF PURGA-TIVES ADMINISTERED TO THE MOTHER.

In the *Practitioner* for March, 1893, Dr. WILLIAM J. Gow contributes a paper with the

above title, in which he states that Fehling drew attention to the fact that certain drugs administered to nursing women made their appearance in the milk. He showed that salicylate of sodium and iodide of potassium, if taken by the mother, could in part be recovered from the child's urine. Mercury taken by the mother did not usually appear in the milk, and opium and chloral, even if given to the mother in considerable quantities, did not seem to produce any effect upon the sucking child.

There is a wide-spread impression, especially among monthly nurses, that purgatives administered to the mother often lead to disturbance of the bowels of the sucking infant. There seems, however, to be no accurate knowledge as to the frequency with which this occurs. The question whether some drugs are more apt to bring about this disturbance than others, and if so, which? does not seem to have been definitely answered. With a view to obtaining some information on these points, observations were made on a number of cases of nursing women who were suffering from constipation. Various purgative drugs were given to them. and the effects produced both on the women themselves and on the infants were noted. Experiments were made with the four drugs,senna, aloes, cascara sagrada, and sulphate of magnesium. In all cases the frequency of the action of the bowels before and after was noted in both mother and child. In all cases the drug under trial was given for not less than a week, but in some cases for a longer period. Those cases were excluded in which the child's bowels were acting very frequently, and also those in which the mother did not seem to possess a reasonable amount of intelligence. attempt was made to determine whether any of the drugs given appeared in the milk. The experiments were purely clinical, and only took into consideration the effect, if any, on the child's bowels. The infants varied in age from three weeks to ten months, and were in all cases fed entirely from the mother's breast. Observations were made on forty-two cases.

1. Senna.—Eleven observations. In eight cases the compound licorice powder was administered and in three the confection of senna. The licorice powder was given in teaspoonful doses, for the most part once a day, but occasionally oftener. In one drachm of the powder there are ten grains of senna and five grains of sublimed sulphur. The confection of senna contains about 4.2 grains of senna in every drachm. The other substances present in the confection, such as figs, cassia, etc., may be

disregarded, as they appear to do little more than slightly to increase the peristaltic action of the intestines.

In ten cases the children's bowels were unaffected. In one case, in which the child was previously costive, the bowels only acting every other day, it was found that after giving confection of senna to the mother twice a day for a week, the child's bowels acted every day.

In no case was the child purged by the use of the drug, which, in the majority of cases, was given in sufficient quantity to bring about a daily action of the mother's bowels.

2. Aloes.—Ten observations. In all cases the pill of Barbadoes aloes, combined with a quarter of a grain of extract of nux vomica, was administered. In five cases this pill was given twice a day, and in five cases only once a day. The amount of Barbadoes aloes contained in each pill is 2.18 grains.

In eight cases the children's bowels were unaffected. In one case the child's bowels, which had previously acted every day, became somewhat more costive, and in one case the child's bowels acted more freely (twice a day instead of once a day). In this latter case it will be observed that the pill was taken twice a day.

3. Cascara Sagrada.—Ten observations. In seven cases the liquid extract was administered, and in three the solid extract. The liquid extract was given in ½-drachm doses, combined with carminatives, three times a day. The solid extract was given in 2- to 5-grain doses twice a day.

In eight cases the children's bowels were unaffected. In one case the child became more costive, and in one case less costive than before.

4. Sulphate of Magnesium.—Eleven observations. In all cases 1-drachm doses of sulphate of magnesium were administered three times a day.

In five cases the children's bowels were unaffected. In five cases the bowels were more freely open than before. In one case the child's bowels became more costive.

These observations, though comparatively few in number, seem to show that sulphate of magnesium administered to the mother leads to purgation of the child in nearly half the cases. The other drugs—senna, aloes, and cascara sagrada—seem only occasionally to produce this result, and therefore may be considered as the most suitable remedies to be used in cases of constipation in nursing women. Whether the slightly-increased activity of the child's

bowels, noticed once in each of the series of cases where the last three mentioned drugs were employed, was really due to the drug or not, it is of course not possible to decide. There seems to be no relation between the effect of the drug on the mother and that on the child. In one case the mother was freely purged, yet the child's bowels still remained costive as before. On the other hand, when the drug given failed to relieve the mother's constipation, the child's bowels sometimes were and sometimes were not affected.

The only conclusions that can be drawn from these observations are:

- 1. Sulphate of magnesium administered to the mother frequently causes looseness in the sucking child; and
- 2. Senna, cascara sagrada, and aloes rarely affect the child's bowels when administered to the mother.

ON THE TREATMENT OF DIABETES MEL-LITUS BY FEEDING ON RAW PAN-CREAS AND BY THE SUBCUTA-NEOUS INJECTION OF LIQUOR PANCRE-ATICUS.

DR. HALE WHITE, in the British Medical Journal for March 4, 1893, gives the following interesting account of his experience in the treatment of diabetes mellitus by feeding the patient on raw pancreas and the subcutaneous injection of pancreatic liquor.

Last November, Dr. White determined on the first opportunity to try the effect of treating diabetes by feeding on pancreas and injecting pancreatic extract, and the two cases subjoined were under treatment at the time when Dr. Hector Mackenzie and Dr. Neville Wood gave an account of their cases in the British Medical Journal of January 14, 1893. They are the first that have been published in which constant determinations of the urine have been made. Messrs. F. G. Hopkins, B.Sc., and W. J. Harris, Dr. White's clinical assistants, made the analyses, and the results may be absolutely relied upon. Each patient was for the whole period of observation kept upon a diet consisting each day of twenty soya bean biscuits, two eggs, two ounces of butter, two almond biscuits, one fluidounce of milk, twelve ounces of cooked meat, greens, water-cress, tea, and soda-water. The state of the patient and of the urine on this diet having been ascertained, each was given, in addition, for his supper, about two ounces of raw fresh sheep's pancreas, chopped fine and flavored with pepper and salt. When this was discontinued, five minims of liquor pancreaticus were injected subcutaneously night and morning, the restricted diet being as before.

We therefore learn that, as regards sugar, in one case it was distinctly less when raw pancreas was taken than it was before, and that the same effect, but to a less degree, was associated with the injection of liquor pancreaticus subcutaneously. In the second case neither of these modes of treatment had any effect in reducing the sugar.

#### QUANTITY OF URINE.

CASE I.—Daily average before the administration of pancreas, 158 fluidounces. Daily average for thirteen days on which pancreas was given, 158 fluidounces. Daily average for six days during which liquor pancreaticus was injected, 137 fluidounces.

CASE II.—Daily average before the administration of pancreas, 94 fluidounces. Daily average for seventeen days during which pancreas was given, 115 fluidounces. Daily average for eight days on which liquor pancreaticus was injected, 108 fluidounces. We may probably conclude that neither the feeding on pancreas nor the injection of liquor pancreaticus had any decided effect upon the quantity of urine.

### THE SPECIFIC GRAVITY.

CASE I.—Before the administration of the pancreas the daily average was 826 grains. When this was given it was 1079 grains, and when the liquor pancreaticus was injected it was 971 grains. It is, therefore, very doubtful whether either the pancreas or the liquor pancreaticus have any effect on the urea; certainly they had not in Case I.; possibly they increased it in Case II.

# EFFECTS ON THE GENERAL CONDITION OF THE PATIENT.

Case I.—Previous to taking the pancreas he had gained twelve pounds in forty-two days. During the treatment he gained seven pounds in the first twelve days, his weight mounting from one hundred and thirty-four to one hundred and forty-one pounds. Four weeks after this it was one hundred and forty pounds. In these four weeks he had had pancreas for six days and liquor pancreaticus for six days, but these weeks also included the period of pyrexia. He enjoyed his pancreas, ate it with relish, but did not appear to feel much better for it.

CASE II.—This patient, on treatment with restricted diet from November 28 to January 5, sank in weight from one hundred and five to one hundred and four pounds. After feeding

with pancreas for seventeen days his weight was one hundred and six pounds; but as it was this two days after the pancreatic treatment was begun, it is doubtful whether it had anything to do with the slight gain. He liked the raw pancreas, and said he felt better on it than anything else. We may conclude that the patients do not lose weight when treated with the pancreas; perhaps they gain a little, and if there is any other alteration, they feel a little better for the treatment.

#### DISADVANTAGES.

It will be noticed that the first case suffered from a severe erythema accompanied by fever. These symptoms could only be set down to the pancreas he was taking, which was, however, perfectly fresh. Probably the illness is of the same nature as that due to shell-fish, or that sometimes brought about in myxcedematous patients treated with thyroid gland. The presence of a sore throat is not against this view, for it may occur in copaiba-poisoning. During the febrile attack the sugar fell very low. The second patient had no rash, but perhaps the rise of temperature and slight sore throat he had on one day were of the same nature as the illness of the first patient.

The general conclusions at which we may arrive, if we may judge from two cases only, are that it is very doubtful whether feeding on fresh pancreas or the subcutaneous injection of liquor pancreaticus is of any benefit in diabetes mellitus. Neither appear to have any influence on the quantity of the urine, its specific gravity, or the urea; perhaps they decrease the amount of sugar passed, and very slightly increase the weight and feeling of strength. Patients like the raw pancreas, but one great disadvantage is that it may cause severe erythema, with fever and a slight sore throat.

# THE INFLUENCE OF SUSPENSION ON VISUAL DIFFICULTIES IN NERVOUS PATIENTS.

BECHTEREFF and VOROLYNSKI contribute an article upon this subject to the Society of Neuro-Pathology and Psychiatry of the University of Kasan (abstract in Annales d'Oculistique, March, 1893). These authors, using suspension in the treatment of certain affections of the nervous system, noted, among other things, the good effects of the method upon visual acuity. In the literature they have found only several short notices by various observers (Darier, Eulenburg and Mendel, Abadie and Desnos, Bernhardt), who have referred

to this fact and mentioned it in the description of their cases. Bechtereff and Vorolynski have undertaken a series of experiments on nervous patients who at the same time suffered from visual defects. These patients were subjected to the treatment of suspension exclusively, and before and after each visit their visual acuteness was carefully examined, as well as the extent of the field of vision for each color. Three cases are reported. In one-tabes dorsalisvision was considerably improved after suspension. In the second—tabes with atrophy of the optic nerves—the visual acuity of the eye chiefly attacked rose from  $\frac{2}{200}$  to  $\frac{5}{200}$ , and remained at this point during two weeks of observation. Finally, in the third case, quoted as an organic affection of one eye, the vision of 15 became 17. At the same time it was remarked that after each suspension there was an increase in the field of vision, especially for white, from five to twenty degrees in different directions. The article closes with speculations in regard to the mechanism by which improvement occurred in these cases.

# ON THE RELATION OF THE EYE TO EPILEPSY.

GEORGES MARTIN (Journal de Médecine de Bordeaux, No. 14, April, 1893), after an investigation of this subject, comes to the following conclusions:

- 1. Neither astigmatism nor hypermetropia is often found to be an active factor in causing epilepsy.
- 2. In the author's (Martin's) hands epilepsy has not been in any way affected by the use of correcting-glasses, either for astigmatism or for hypermetropia.
- 3. The cases related by Stevens indicate the possibility of remedying this disease, under certain circumstances, by optical means.
- 4. It is, therefore, wise, when treating an epileptic, when nothing else explains the disease, to think of the ocular conditions.

Martin suggests that the different results obtained by himself and by Stevens may be owing to the fact that he believes in America the refraction of a patient is usually determined and corrected after subjecting him to a mydriatic (and hy giving him glasses which neutralize the totality of the hypermetropia), while in Europe it is customary to correct only the manifest hypermetropia plus one-quarter of the latent hypermetropia. The result is that the ciliary muscle of patients thus corrected has imposed upon it much more work than

under the first-named circumstances. He speculates whether Stevens owes his cures to a more complete rest of the accommodative function, and thinks it is possible that such may be the case, quoting in substantiation of his idea a recent publication of the apparent cure of an epileptic boy by the full correction of a marked hypermetropia, only a very slight portion of which was manifest.

### THE THERAPEUTICS OF MYOPIA.

VALUDE (L'Union Médicale, No. 31, March, 1893), in the last of a series of articles on a clinical study of myopia, writes thus concerning its treatment: When myopia is confirmed, and it is necessary to have recourse to corrective glasses, the choice of the suitable lens is not always an easy one, even when the extent of the real myopia is known. It would be a serious fault invariably to order for all myopes the glass which corresponds exactly to their degree of ametropia.

For simple and slight myopia—that is, from 1 to 2 D.—the ametropia must not be corrected, nor must concave glasses be given. For myopia of 2 to 5 D. the patient needs glasses to see at a distance. In this case he must be given the glass which corrects all his myopia, but only to see at a distance. For short ranges glasses must not be ordered. His punctum remotum is situated at a sufficient distance to adapt the eye to work, and it is useless to oblige him to make efforts of accommodation. When the myopia ranges between 5 and 9 D., as in the preceding case, the glass which corrects all the myopia must be given for long ranges; but for reading, a glass of 2 D. less than that given for distance. For the piano, the fully correcting lens should be diminished by 1 D. In very high degrees of myopia—o D. and above—no effort should be made to correct the entire myopia, and both for distance and for close work the glass must not be stronger than o D. Myopias which exceed 7 to 8 D. must be watched, because they may become acute. The fundus oculi should be examined frequently, and if there is any tendency to spasm of accommodation, atropine should be used.

In slight degrees of myopia—from 1 to 2 D., for instance, and even when the myope has not made use of corrective glasses—muscular asthenopia may arise. If there is a tendency to divergence, under these circumstances, a prism of 1 to 2 degrees, with its base inward, is recommended. If the myope who has mus-

cular asthenopia is obliged to wear corrective glasses, the efforts at convergence may be diminished by simply modifying the position of the glasses, without adding anything to them,—that is, by decentring them. Thus, the concave glass neutralizes the ametropia and acts as a prism. In cases of insufficiency of the internal rectus prisms will not answer, and tenotomy of the external rectus must be resorted to.

In cases of extreme myopia complicated with choroidal lesions, it often occurs that no glass will succeed in improving vision. Under these circumstances the patients should be advised not to fatigue their eyes, not to read or write, and smoked glasses should be recommended. In very bad cases of high myopia, where the patients are practically condemned to inaction, the extraction of the transparent crystalline lens has been performed. By this operation accommodation is suppressed and the degree of myopia reduced. The crystalline lens has a power of refraction equal to 11 D., but in its anatomical position is equivalent to a glass of 18 D. placed a centimetre and a half before the eye. First Fukala, then Pflüger and Vacher have reported successes with this operation. Valude has had a case in a child of ten years of age possessing a myopia of 15 D. Removal of the crystalline lens resulted in a hypermetropia of 3 D., and the child read well with both eyes at a distance of thirty centimetres. Two months after the operation, however, one of the eyes became atrophied, a fact not surprising considering the bad condition of the choroid and of the vitreous. Nevertheless, he thinks it is an operation that might be of great service in marked myopia. So far as the process of operation is concerned, he takes issue with those authors who advise extraction of the transparent crystalline at the onset. He prefers performing discission of the crystalline lens and removing the softened masses a few days later. He thinks there is less traumatism and less likelihood of accidents, which are always to be feared in eyes as pathological as are those attacked with extreme myopia.

# TREATMENT OF DETACHMENT OF THE RETINA.

M. Bourgeois (Paris, 1883; review in Annales d'Oculistique, March, 1893) recommends actual cauterization of the sclerotic in detachment of the retina. He says that the cauterizations must be made successively and rapidly on the whole surface of the sclerotic corresponding to the place of detachment, on condition

that no part which is on a level ciliary zone is to be touched. On an average from twelve to fifteen spots of cauterization are produced. If there is a loose detachment of the retina, the thermo-cautery may be thrust through in the central portion, so as to allow the subretinal liquid to escape. A complication which may arise is the production of uveitis, and hence it may be necessary to use instillations of atropine in order to avoid synechiæ.

# THE TREATMENT OF HYDATID CYSTS OF THE ORBIT.

Terson (Annales d' Oculistique, March, 1893) advises in cases of hydatid cysts of the orbit as follows:

- 1. Make a puncture large enough to empty the cyst, and observe the results of the first operation.
- 2. In case of failure, make a larger incision, followed by prolonged injection of distilled aseptic water, and try to extract the hydatid vesicle by simple traction with the aid of pincers.
- 3. Do not induce suppuration of the sac until thorough attempts have been made at extraction in the manner described.

### CATARACT OPERATIONS.

DR. W. T. MONTGOMERY (Journal of the American Medical Association, April 22, 1893) prefers simple extraction in all cases of uncomplicated cataract. If the cataract is not readily delivered through the pupil without bruising of the iris, he does not hesitate to make the iridectomy, converting the simple extraction into extraction with iridectomy.

The eye is cocainized with a fresh four-percent. solution of cocaine. The instruments, except the cataract-knife, are immersed for a few minutes in boiling hot water. The knife-blade is immersed in alcohol and wiped with a soft bit of linen, its point and edge having been tested. The closed eye is sponged externally with a saturated solution of boracic acid. He does not put the solution into the eye, because the conjunctiva is healthy, and he considers the healthy secretions of the eye the best antiseptic for it.

The incision includes about one-third of the cornea, and is made as nearly as possible entirely through the sclero-corneal junction. The capsule is opened with the cystotome, and the cataract is readily extracted through the pupil. The blood is removed from the eye, and the

edges of the wound are accurately coaptated. One drop of a solution of eserine sulph. (1 grain to 1 ounce) is instilled into the eye. The lids are closed, and a bit of soft linen moistened in the boracic acid solution is applied; then just sufficient absorbent cotton to even up the orbital depression; and, lastly, the gauze bandage. This consists of ordinary mosquito-netting, cut one and three-fourths inches broad and four yards long. It is applied moist, and the starch in it is sufficient to set it and hold it in place. This dressing is light and comfortable. The patient is put in a moderately-darkened room, and allowed to sit up or lie down, as he feels inclined. He is permitted to use his good eye just sufficiently to help him-If the eye which has been operated on remains comfortable, the dressing is not to be removed until the third day. Then the dressing is changed; a drop of the one-per-cent. solution of atrop. sulph. is instilled between This is repeated the fifth day and the seventh, when, if the wound is closed, a shade is substituted for the bandage, and the patient permitted to leave his room.

For ripening cataract, the operation which he prefers is Förster's operation. The precautions which it is most important to observe in this operation are: First, confine the trituration to the area of the pupil and coloboma, so as not to pinch or bruise the iris; second, do not make too much pressure, or the lens may be dislocated; third, keep the cornea moist while the trituration is being done. He has performed this operation more than fifty times, and has not had any severe reaction in any case. As a rule, eyes have recovered from it as quickly as from a simple iridectomy. In a few cases there was not any appreciable effect upon the cataract, but in a large per cent. of the cases there was marked increase of the opacity the next day, and in a number he was able to make extraction successfully at the end of two weeks. This eye is dressed in the same manner as after extraction, and the patient is kept quiet for two or three days. If there is no reaction, the shade is substituted for the bandage, and the atropine solution is dropped in the eye once daily until all redness has disappeared.

### THE INDICATIONS FOR THE ENUCLEA-TION OF AN EYE.

DR. EDWARD JACKSON (*Philadelphia Polyclinic*, April 15, 1893) summarizes the indications for enucleation as follows:

1. The presence in the eye of a malignant

- new growth, as glioma, sarcoma, or tuberculosis. This indication is imperative no matter how much vision the eye retains.
- 2. The presence in the eye of a foreign body, with irido-cyclitis. If the injury be recent and the inflammatory process still active, and the patient cannot remain under observation, an eye with anything less than thoroughly useful vision should be sacrificed.
- 3. The presence of a foreign body in a blind eye.
- 4. Blindness, with diminished tension of the eyeball, following perforation either by traumatism or corneal ulcer, most urgent after traumatic perforation of the exposed portion of the sclera.
- 5. Blindness the result of irido-choroiditis without perforation of the eyeball, if the patient cannot remain under observation.
- 6. Sympathetic inflammation, provided the exciting eye does not possess vision sufficiently good to be weighed against the chances of the sympathizing eye.
- 7. The actual presence of sympathetic irritation; not the risk of it, unless the patient is likely to be out of reach of surgical aid.
- 8. Persistent pain in a blind eye, sufficient to annoy its possessor or tempt him to the use of analgesic drugs.
- Serious disfigurement of a blind eye, even if free from pain or risk of causing sympathetic disease.

# THE TREATMENT OF HEMORRHAGIC GLAUCOMA.

- C. DE BOURGON (Annales d'Oculistique, March, 1893), after a thorough review of the literature of hemorrhagic glaucoma and the various operations which have been practised for its relief, comes to the following conclusions:
- 1. True hemorrhagic glaucoma presents a gloomy prognosis, as is evidenced by the large number of enucleations which have been performed for its relief.
- The different operations proposed for the treatment of other forms of glaucoma are, with the exception of sclerotomy, useless and painful.
- 3. Since the general prognosis is almost as serious as the local prognosis, whenever the ophthalmologist deals with a case of hemorrhagic glaucoma, the general condition of the organism of the patient, and particularly the vascular lesions, should receive due consideration and treatment.
- 4. The treatment of hemorrhagic glaucoma should be conducted in the following manner:

During the hemorrhagic period the general condition must be cared for and the ocular globe rendered as free from congestion as possible. During the period of confirmed glaucoma it is recommended to use myotics, moist heat, and injections of ergotine in the temple. If this medication does not produce a sedative effect, surgical treatment is indicated, and of the various operations which have been advised, scierotomy, simple or equatorial, is the best. Iridectomy must be rigorously avoided. If sclerotomy, together with medicinal means repeated at need, do not produce a lessening of the intraocular tension with a calming of the painful symptoms, one must have recourse to enucleation without attempting other operations.

# CENTRAL CHOROIDITIS TREATED BY SUBCONJUNCTIVAL INJECTIONS OF SUBLIMATE.

M. DARIER (Annales d'Oculistique, March, 1893) presented a patient to the Society of Ophthalmology of Paris, in the session of February 7, who had suffered with monolateral choroiditis, the lesions of which were largely confined to the macula. In January, 1892, the patient noticed that she saw lines as if they were broken and that objects were deformed. A course of mercurial frictions and iodide of potassium was useless. She consulted Darier November 11, 1892. Her vision at long range was relatively little altered.  $V = \frac{1}{4}$  at five metres, but at short range reading was impossible with average characters. She could only read No. 7 De Wecker. On November 28, after ten subconjunctival injections,  $V = \frac{2}{3}$  at five metres, and she could read at close range the finest characters (No. 2 De Wecker), but the lines were still broken. After a month's rest the treatment was resumed, and to-day the sight of the diseased eye is equal to that of the sound eye,—V. = 1; reads at close range No. 1 De Wecker. In spite of this there is still a slight metamorphopsia, on account of the scar in the macula, which encroaches upon the fovea centralis.

# DENDRITIC ULCERATION OF THE CORNEA.

DR. H. M. MORTON (Annals of Ophthalmology and Otology, April, 1893) reports two cases of dendritic ulceration of the cornea, each characterized by the presence of a small central ulcer, with several branches springing from a central point, resembling in form a

Maltese cross, and with well-marked serrations on the extending branches. He dusted aristol upon the ulcer, and considers this a remedy of much value in corneal lesions of this character. In his cases, however, both atropine and eserine were also used. He refers to the use of creolin in dendriform ulceration of the cornea, but does not state personal experience with this drug.

DR. JOHN DUNN, of Richmond (Annals of Ophthalmology and Otology, April, 1893), reports a case of dendritic keratitis associated with a high grade of inflammatory reaction and accompanied by violent pain. There was also herpes zoster of the lid. Excellent results were achieved by the use of the galvanic current, one pole being on the nape of the neck and one on the closed lid of the affected eye. The patient also took iodide of iron and phosphide of zinc, and the ulcer was touched with a pyoktanin solution, while cocaine and atropine were instilled in the conjunctival cul-de-sac, and boiling water applied externally.

#### ASEPTIC COLLYRIA.

M. VIGNES (Annales d'Oculistique, March, 1893), desiring to have collyria entirely beyond the chance of microbic infection, and the therapeutic efficacy of which should not be weakened by the development of fungi, has had the solutions sterilized, and a small quantity of each placed in a little tube drawn out and sealed by means of a flame. All that is necessary is to snap off the end of the little tube and drop the contents upon the surface of the eye. Tubes which have been filled with solutions of atropine and hydrochlorate of cocaine for weeks at a time show no alteration. Salicylate of eserine is more difficult to preserve. It may remain clear, but changes its color. To avoid this, the solutions of eserine have been placed in red and yellow glass tubes.

## ON THE USE OF THIERSCH'S SKIN-GRAFTS AS A SUBSTITUTE FOR CONJUNCTIVA.

DR. F. C. HOTZ (Annals of Ophthalmology and Otology, April, 1893) contributes an additional experience upon the use of Thiersch's skin-grafts for the purpose indicated in the title. These grafts should be taken from any convenient surface of the skin, usually from the arm or the thigh, in the following manner: The skin is rendered thoroughly aseptic, and then being drawn tense and well wet with a

solution of sodium chloride (one-half-per-cent.), the blade of a sharp razor is laid upon and firmly pressed against the skin in such manner that slight sawing motions will make the edge of the razor just cut down to the papillary layer, and shave off a thin scale, consisting of epidermis and the tips of the papillæ.

In Dr. Hotz's experience they have proven an excellent material for repairing defects of the conjunctiva in the following conditions: 1, extensive adhesion of the lower lid to the eyeball (symblepharon following the destruction of the palpebral or ocular conjunctiva by lime or hot metal); 2, excessive shrinking of the conjunctiva in trachomatous eyes; 3, enlarging a contracting conjunctival pocket to make the insertion of an artificial eye possible; 4, in certain cases of pterygium.

### TOXIC AMBLYOPIA FROM IODOFORM.

PRIESTLEY SMITH (Ophthalmic Review, April, 1893) quotes the following case which occurred in the medical wards of the Queen's Hospital under the care of his colleague, Dr. Foxwell, to whom he is indebted for the use of a very full clinical record made at the time:

Harry B., aged thirty-one, was admitted November 18, 1891. He had been treated three months earlier for pleuritic effusion. He was now suffering from diarrhoea, vomiting, emaciation, and rapid loss of strength. He was found to have, among other changes, dry pleurisy at both bases, and a solid substance in the abdomen, which was regarded as being probably due to tuberculosis of the omentum. The diagnosis was chronic tubercular pleurisy and peritonitis.

From December 5 to January 15, a period of forty-one days, he was treated with iodoform in pills, and during this time took no other drug excepting 5-grain doses of bicarbonate of sodium in infusion of calumba. He took at first 2 grains of iodoform three times a day, and the quantity was steadily increased until during the last ten days he took 4 grains eight times a day,—i.e., 32 grains per diem. He took altogether about one thousand grains in forty-one days. The iodoform was then stopped on account of toxic symptoms, especially amblyopia.

The onset of the amblyopia was associated with headache, giddiness, and faintness, the latter being due probably to a weak heart; also with diarrhea, a constant taste and smell of iodoform, twitching of the hands, and emotional depression; also with a marked change

in the urine,—viz., from high acidity with uric acid and urates, to alkalinity with triple phosphates. On the third day after the iodoform was stopped there was great drowsiness and slight left ptosis; the next day the drowsiness had given place to irritability, and the ptosis was gone. There were numbness and tingling in the legs, and the knee-jerks were increased.

Four days after the iodoform had been discontinued Mr. Smith examined the patient with regard to his eyes. The refraction was normal; the media were clear in both eyes. In both there was slight haziness of the disk margin, but no pronounced papillitis. Vision was greatly impaired, a well-marked central scotoma, absolute for white paper at or near the fixation-point, being present in each eye. Tested with red, the scotomata appeared to be larger than those commonly found in tobacco amblyopia. The loss of vision appeared to have begun a day or two before the iodoform was stopped, and while the patient was taking the maximum quantity of 32 grains a day, and to have rapidly increased from day to day. Up to this time he had seen well, for he had observed the pictures on the far side of the ward, and had read the newspaper as he lay in bed. Re-examined seven days after the iodoform was stopped, the haziness of the disk margins was rather more pronounced. The patient thought his vision had already begun to improve.

Four weeks later he came again under Mr. Smith's notice, and had still a small color scotoma in both eyes, with a very small absolute scotoma just below the fixation-point. Vision: R.  $\frac{6}{86}$ , L.  $\frac{6}{24}$ . He then received subcutaneous injections of strychnine for a week, and later iron and strychnine by the mouth. Vision improved steadily, and on April 8—i.e., about three months after the onset of the amblyopia—it had risen to  $\frac{6}{8}$  in each eye, and no scotomata could be found. The patient's general condition was much better than at the time of his admission into the hospital.

The following facts as to the patient's use of tobacco appear to exclude that agent as a possible cause of the amblyopia. Before admission he had habitually smoked about two ounces a week; during his stay he did not smoke at all, excepting about a quarter of an ounce on Christmas-day. It was, therefore, about seven weeks after the discontinuance of regular smoking, and three weeks after the one indulgence at Christmas, that the rapid onset of the amblyopia occurred. Moreover, during the period of recovery from the amblyopia, when he was no longer an in-patient, he resumed his

smoking, though probably in smaller amount than before.

With regard to the internal administration of iodoform in general, Dr. Foxwell has written Mr. Smith the following note: "I have given iodoform to a large number of phthisical patients during the past five years, and have always endeavored to reach a dose of 30 grains per diem, and to continue this for about six weeks. The patients have either complained of gastric disturbance when taking a small dose,—and I have then generally found it useless to continue the treatment,—or have submitted to the exhibition of the full dose with no bad symptom, except occasionally a vague depression. Only once did I notice any cerebral affection,—aphasia in a gentleman with bronchiectasis. Never, to my remembrance, has any one of my patients complained of visual defect. I have now under care a young gentleman of eighteen, phthisical, who has taken 27 grains daily for fourteen months, and has gained a stone in weight while doing so."

### STATISTICS ON THE FATALITIES OCCUR-RING UNDER THE ADMINISTRA-TION OF ANÆSTHETICS.

In the Wiener Medizinische Wochenschrift, No. 18, 1893, the record of the Committee for the Collective Investigation of the Statistics of Anæsthetics, reported to the German Surgical Congress, through Gurlt, again proves that ether is by all means the safest anæsthetic. The use of bromide of ethyl resulted in one fatal case in Billroth's clinic. This is as dangerous as chloroform, and is no more serviceable than is nitrous oxide.

König, in discussing these statistics, states that no patient should perish from respiratory failure due to chloroform, but that sudden heart-failure cannot always be prevented. Three patients, who were in grave danger from this, were saved by König by means of his method,—that is, of strong rhythmical blows over the heart region. Occasionally, after a long time, the pulse will be found isochronous with these rhythmical blows.

Von Bardeleben stated that he had used chloroform every year since 1848 in at least one thousand cases annually, and up to the year 1878 he had had no fatal result.

Although Gurlt has collected one hundred and thirty thousand cases of chloroform narcosis, this number is yet too small to justify definite conclusions.

Küster employed chloroform for twenty-one

years, but now uses ether, and is very well satisfied with it. Only in cases of head and neck operations is it troublesome, since here the mask employed can infect the wound, or may be in the operator's way.

#### SURGERY OF THE SPINE.

DELORME (Annales d' Orthopédie, tome vi., 7 année, No. 4) reported two cases of spinal surgery. The first suffered from caries with chronic kyphosis. There had been progressive paralysis for eleven months, and the patient had no control over either the bladder or rectum. Laminectomy was performed, and there was found local pachymeningitis; a bone abscess situated between the cord, and the deep surface of the vertebral bodies was opened and curetted. In twenty-four hours sensibility returned to the lower extremities, and the functions of the bladder and rectum were restored.

The second case was suffering from acute paraplegia, with intermittent contractures of the right upper extremity. Laminectomy of the eleventh, tenth, ninth, and eighth dorsal vertebræ was performed. Extensive pachymeningitis was found. Fungous growths were removed. The dura mater was well scraped. At the autopsy there was found meningeal myelitis and cerebral and cardiac lesions.

## HYDATID CYST OF THE LIVER.

BILHAUT (Annales d' Orthopédie, tome vi., 7 année, No. 4) reports a case of successful operation for the cure of hydatid cyst of the liver occurring in a child six and a half years old. After a general consideration of the clinical course and the appropriate treatment in such cases, he gives the following therapeutic summary: In accordance with their positions, the cysts of the liver can be classified as anteroinferior, postero-inferior, antero-superior, and postero-superior. The antero-inferior cysts develop in the direction of the abdominal cavity, and behave very much as the hydatid parovarian cysts. It is evident that under such circumstances puncture, whether or not it is followed by injection, is dangerous, since there is always a risk of rupture of the general peritoneal cavity. Here laparotomy and excision is strongly indicated. Postero-inferior cysts should be treated by puncture, but in case of recurrence they should be incised. The seat of operation should be in the lumbar region behind. The antero-superior cysts

are those which puncture can cure. Puncture should be followed by antiseptic injection. If, however, there are many daughter cysts, this means of treatment will not avail. In the postero-superior cysts puncture ought first to be tried; in case of failure it should be followed by incision. Whenever puncture shows the presence of pus the cavity should be treated as simple abscess.

When antiseptic injections are employed they should never be used in such strength or quantity that when the whole injection is used there is a toxic dose of the substance employed.

Felizet reported an unsuccessful case in a child of five years. Puncture followed by injection of Van Swieten's solution was not followed by prompt evacuation. Coeliotomy was performed and the cyst ruptured during intraabdominal manipulations; the child perished the same day.

Bouilly calls attention to the fact that the injection of a large quantity of sublimate is not only dangerous, but also unnecessary, since the hydatids are shortly killed by a quantity of sublimate far below that necessary to produce toxic results.

Verneuil reported a case of death due to injection of phenic acid. Before this treatment the cyst had already been punctured a number of times. The evacuated contents suggested the existence of blood-tumor of the spleen. After puncture, an antiseptic washing—a large quantity of liquid, containing in all about 1½ drachms of the phenic acid—was injected. None of this flowed out again, and the patient died in two days. The injection of sublimate in these cases has not always been successful in Verneuil's hands, doubtless owing to the existence of several daughter cysts.

Terrior, though strongly favoring surgical intervention, stated that he had had numbers of successes after puncture and injection.

# PUERPERAL SEPSIS: ITS PREVENTION AND CURE.

POTTER (Annals of Gynæcology and Pediatry, vol. vi., No. 7), after an interesting discussion of this important topic, arrives at the following conclusions:

1. Obstetric engagements once accepted should be faithfully fulfilled, no matter how awkwardly they fit. Apply the same rule of cleanliness to rich and poor alike. Decline service when this cannot be done. Human life is too precious to jeopardize it by slipshod, half-hearted, or indifferent service.

- 2. The physician should be a model of cleanliness in body and clothing, and should insist upon the observance of similar conditions by all persons in and about the lying-in chamber.
- 3. The delivery-room, whether in hovel or palace, court, alley, or avenue, should be simple in its furniture and hangings, and be cleaned with soap, water, and whitewash (if possible to use the latter) immediately before occupancy by the puerpera.
- 4. The delivery-bed should consist of a new tick filled with sweet and clean straw, covered with a blanket, impervious dressing, and a folded sheet, with other clean covering to be allowed, according to season. Exceptions to this simple bed should be as few as possible, and in no event should a bed be substituted that has been used by the sick, or that is not beyond even a suspicion of infection.
- 5. The patient should be specially prepared for delivery by baths and enemata, vaginal douches and clean clothing, and labor should be conducted on the lines of absolute cleanliness, with few digital examinations, and a complete delivery of the secundines.
- 6. Lesions of the genital tract should receive careful attention; rents of the peritoneum should be repaired, and so, too, in some instances, should tears of the cervix.
- 7. Antiseptic solutions containing a germicide should be used for cleaning the hands and instruments of the operator. Intrauterine irrigation with sterilized water should be carefully employed after operative midwifery, either manual or instrumental.
- 8. Finally, if sepsis proceed to suppuration and abscess, the abdomen should be opened, pus-cavities emptied, irrigation used, and drainage established. If the uterus and adnexa become thoroughly infected they should be extirpated.

# A MODIFICATION OF THIERSCH'S METHOD OF SKIN-TRANSPLANTATION.

TRINKA (Wiener Medizinische Wochenschrift, No. 18, 1893) having noticed, in extensive skintransplantations according to the method of Thiersch, that the flaps first placed in position were most prone to preserve their vitality, adopted the practice, after having thoroughly covered in the wound, of leaving it for one to three hours entirely without dressing, thus allowing it to dry, and indeed encouraging the process by blowing upon it by means of a bellows or similar apparatus. As a result the vitality of the flaps is preserved throughout, nor was he troubled by the loosening of some

portions of the transplanted skin at the first dressing. To avoid the maceration occasioned by protective of oiled silk, or other smooth surface, applied directly over the transplanted skin,—in other words, to keep the wound surface perfectly dry and at the same time to get rid of secretions,-Trinka covers the whole transplanted area with a light layer of europhen powder (which is dusted on with a fine brush, or insufflated through a tube). Over this is placed gutta-percha thinly coated with vaseline: This dressing overlaps the freshened area by one inch in all directions. Between this dressing and the wound surface some portions of wick are laid for the purpose of carrying away secretions by capillary traction, and the guttapercha is then secured to the skin by means of chloroform applied to its borders. Over this is placed a layer of wood fibre, then of cotton, and finally a muslin bandage is applied. dressing is not allowed to remain longer than two days, and on each repetition the wound surface is dried thoroughly. The results of this dressing were in all cases most satisfactory.

# THE TREATMENT OF GONORRHŒA IN THE MALE.

SAALFELD (Medicinisch-Chirurgisches Centralblätt, No. 17, 28 Jahr, 1893) classes gonorrhœa with the eruptive fevers in the sense that it is an affection from which few adult males have been spared. He also believes that the therapeutics of this affection is but little understood, and calls the attention of the medical profession at large to the fact that dancing, riding, and violent gymnastic exercises are not advisable during the inflammatory stage of the disease. He further calls attention to the suspensory bandage during the day, and to prevent soiling of the linen by the discharge, covers the meatus with absorbent cotton and wraps the penis in repeated folds of linen cloths. He states that cheese is a powerful excitant to erections, and hence, very rationally, advises against its use during the earlier stage of gonorrhœa. Against painful erections he advises camphor, lupulin, monobromate of camphor, and particularly the combination of antipyrin with bromide of potassium, 15 grains of the former to 45 grains of the latter. As for the local treatment, in recent cases this should be confined to cold or lukewarm local washings, continued for five to fifteen minutes three to six times a day. As to the injections, the one to be preferred in the first place is a one-per-cent. solution of sulphate of thallin, to be weakened

if it occasions much burning. The strength of the solution is gradually increased as the discharge lessens. The injection is repeated four to six times a day. If this is not efficient, a solution of sulpho-carbolate of zinc 2 to 3 parts to 1000, or a mixture made up of zinc sulphate 10 of 1 part, acetate of lead 10 of one part, and distilled water 100 parts, or sulphate of zinc, carbolic acid, and alum each .2 or .3, water 100 parts, or permanganate of potassium .3 to 100, or resorcin 1 or 2 to 100, or solution of tannin .25 to .5 to 100, may be used as injections. In addition, salol, oil of santal, copaiba, and cubebs can be given by the mouth.

# THE TREATMENT OF SUPPURATIVE BUBOES.

Otis (Journal of Cutaneous and Genito-Urinary Diseases, vol. vi., No. 5) treated sixteen suppurating buboes according to the following The skin for some eight or ten inches method. about the affected area was rendered thoroughly aseptic by scrubbing with green soap, washing with sulphuric ether, and then douching with a solution of mercuric chloride 1 to 1000. narrow bistoury was then inserted into the abscess cavity, and the contents gently but thoroughly squeezed out. The cavity was irrigated with a solution of mercuric chloride 1 to 1000, and immediately filled to moderate distention with warm iodoform ointment (ten per cent.), care being taken not to use a sufficient degree of heat to liberate free iodine. The syringe used for introducing the ointment was the ordinary cone-pointed, glass, clap syringe. The plunger being removed, the barrel, gently warmed in the flame of an alcohol lamp, was filled with the ointment by means of a spatula, and the plunger replaced. On finishing the injection, at the instant of withdrawing the syringe from the wound, a compress wet with cold bichloride solution was applied, which instantly solidified the ointment at the orifice, preventing the escape of the contents of the abscess cavity. A large compress of dry bichloride gauze was then applied, covered by a protective dressing of cotton, and retained by means of a firm spica. The patient was requested to return at the end of four days. If all was well at this time, the dressing was simply reapplied; but if there were any evidences of inflammatory action, the wound was thoroughly irrigated and cleansed, and the injection repeated.

The advantages claimed for this procedure are,—

1. It is simple and safe.

- 2. In suitable cases cure, as a rule, seems to be more rapid than by any other method.
- 3. The patient is not prevented from going about during treatment.
- 4. The first gland being rendered thoroughly aseptic, renders it less likely that other glands in the chain will become infected (?).
  - 5. It leaves no tell-tale scar.
- 6. It in no way interferes with the performance of any subsequent surgical procedure, if such should be deemed advisable.

In Otis's cases, as a result of this treatment, nine were cured in six days, three in twelve days, one in fourteen days, one in twenty-three days, and two deserted during treatment.

### REMOVAL BY ELECTROLYSIS OF AN EX-TENSIVE HAIRY NÆVUS OF THE FACE.

Fox (Journal of Cutaneous and Genito-Urinary Diseases, vol. xi., No. 5) reports a case of hairy nævus of the face so large that removal by the knife would have occasioned striking deformity. He believes in such cases the use of the electrolytic needle is the only method which will remove the unsightly growth and leave the skin in a nearly, if not quite, normal condition. The satisfactory result usually attained by the use of this method, and so often missed by the employment of various caustics, is due to the fact that no destructive agent can be kept under control to the extent which is possible in the use of electrolysis.

The particular case reported by Fox was one in which the growth occupied a portion of the right cheek, involved the whole of the lower eyelid, and extended as far as the ridge of the nose. It was raised and verrucous in appearance, and was mostly covered with a growth of coarse, dark hair, which the patient kept short by the use of scissors. In the centre of the patch there was a mass of dry, blackish, friable substance projecting a half-inch or more, and evidently partaking of the nature of a cutaneous horn.

The treatment consisted in carefully passing a fine, flexible steel needle connected with the negative pole of a galvanic battery through the most superficial portion of the growth, the circuit being completed by the patient grasping a moist sponge attached to the positive electrode. This was repeated until the electrolytic destruction of tissue reduced the growth to the level of the surrounding skin, removed the pigmentation, and to a certain extent destroyed the hypertrophied hair-follicles. The slight growth of hair which persisted after the affected skin

had become smooth and comparatively normal in color was destroyed by the introduction of the electrolytic needle into each separate follicle according to the method employed in the treatment of superfluous hair upon the chin and elsewhere.

The battery used consisted of forty Law cells, with a rheostat reducing the current to a strength of from three to five milliampères. The effect of the electrolytic action around the needle was to produce a destructive inflammation, which was quickly followed by a thin superficial crust, which dried and fell usually in a few days.

The long-continued treatment in this case was by no means painless, especially upon the eyelid; but the patient, animated by his desire to have the unsightly growth removed, never once made the slightest complaint. The operations, which extended over a period of nearly four years, were often repeated week after week; while, on the other hand, intervals of several months were allowed to elapse. At the end of the first year about one-half of the growth was destroyed, and had it not suited the convenience of both patient and physician to proceed slowly with the treatment, doubtless the whole of the growth might have been removed in much less time. In the treatment of such a case, however, the highest degree of success depends upon taking sufficient time, and any undue haste is very liable to lead to the unnecessary formation of deep and permanent cicatrices. To completely remove the disfiguring growth and to leave the affected skin in the best possible condition, time is indispensable, and electrolysis seems to afford the safest and surest method of accomplishing the desired result. It may be added that not only is time required to achieve the result, but a considerable amount of patience on the part of the physician and persistent pluck on the part of the patient. With these at command, a hairy nævus upon any portion of the body and of any size can be removed and the skin left in an almost normal condition.

## BLOODLESS AMPUTATION OF THE HIP-JOINT BY A NEW METHOD.

SENN (International Journal of Surgery, vol. vi., No. 4) amputates the hip-joint by the following method:

The external incision is made about eight inches in length, parallel to the long axis of the femur, directly over the centre of the great trochanter, extending about three inches above the upper border of the trochanter.

When the knife reaches the trochanter from above downward, its point should be kept in contact with the bone the whole length of the remaining part of the incision. The margins of the wound are now retracted and any spurting vessels secured by applying pressure forceps. The next step of the operation consists in drawing the body down so that the pelvis rests upon the lower edge of the table, the pelvis being tilted sufficiently upon the opposite healthy side to facilitate the next step of the operation. The trochanteric muscular attachments are now severed close to the bone. The division of the tendon of the obturator externus requires special care. The thigh is now flexed, strongly adducted, and rotated inward, when the capsular ligament is divided transversely at its upper and posterior aspect. The remaining portion of the capsular ligament is severed, while the thigh is brought back to a position of slight flexion. After complete division of the capsular ligament, the thigh is rotated outward and the ligamentum teres divided; if this cannot be readily done, the head of the bone is forcibly dislocated upon the dorsum of the ilium by flexion, adduction, and rotation inward of the thigh. After dislocation has been effected, the trochanter minor and upper part of shaft of femur are cleared by using alternately the scalpel and periosteal elevator. By pushing the femur through the opening as much of the shaft can be cleared as may be desired for the purpose of making a low amputation. Up to this point, if the surgeon has kept close to the bone, there is very slight hemorrhage. Further loss of blood during the subsequent steps of the operation is prevented by elastic constriction applied in the following manner: The limb is brought down in a straight line with the body, the thigh slightly flexed, so as to push the upper free end of the femur forward into and beyond the wound, when a long, stout hæmostatic forceps is inserted into the wound behind the femur and on a level with the trochanter minor when in normal position; the instrument is pushed inward and downward in a direction about two inches below the ramus of the ischium and just behind the adductor muscles. As soon as its point can be felt under the skin in this location an incision is made through the skin about two inches in length, through which the instrument is made to emerge. After enlarging the tunnel made in the soft tissue by dilating the branches of the forceps, a piece of aseptic rubber tubing, three-quarters of an inch in diameter and about three or four feet in length, is grasped with the forceps in the middle, and is drawn along the tunnel as the for-

ceps is withdrawn. After this has been done, the rubber tube is cut in two at the point where it was grasped by the forceps. With one-half of the tube the anterior segment of the thigh is constricted sufficiently to completely interrupt both the arterial and venous circulation. Prior to constriction the limb is rendered bloodless by elastic compression, or by keeping it in a vertical position for a few minutes, or both of these methods are combined in preventing unnecessary loss of blood. The elastic constrictor is either tied, or, still better, after having secured the necessary constriction, both tubes are caught and held by a strong pair of forceps at a point where they cross each other. posterior segment of the thigh is constricted by the remaining rubber tube, which is drawn sufficiently tight behind, when the ends of the tube are made to cross each other, and are brought forward and made to include the anterior segment, when they are again firmly drawn and tied, or otherwise fastened, above the first constrictor. As the anterior segment of the thigh contains the principal blood-vessels, this method of applying the posterior constrictor furnishes an additional security against hemorrhage from the large vessels when divided by the circular incision.

The long anterior and short posterior flaps are best adapted for a useful stump and efficient drainage. In making the anterior flap the incision is commenced at the lower terminus of the straight incision; dividing the tissues down to the muscles, it is carried downward; then, in a gentle curve across the anterior aspect of the thigh, embracing about two-thirds of the circumference of the thigh, it is finally carried upward to a point on the inner side just below the opening in the skin occupied by the con-The posterior flap is made in a simistrictors. lar manner, but about one-third shorter. The flaps are now reflected to the point where the muscles are to be divided, and should always include the deep fascia. The flaps are to be held out of the way while the operator completes the amputation by dividing the muscles with an amputating-knife. This last incision will correspond to a point on the femur to where the bone has been deprived of soft parts. The incision through the muscles should be slightly conical, with the apex of the cone directed upward, and corresponding to the location of the tube made by the enucleation of the femur.

The sciatic nerve is now resected to the extent of an inch or more, and the femoral artery or arteries tied with catgut in the usual manner. The femoral artery and vein are now isolated,

and a second catgut ligature, including both of these vessels, applied half an inch higher up. In this manner the vein is ligated, while the artery is secured by a double ligature, which places the end of the vessel in the best possible condition for definite closure and cicatrization. The intermuscular septa are now examined, and any vessels that can be seen are tied. While the posterior constrictor is removed, the posterior half of the stump is firmly compressed by applying a hot, moist compress of aseptic gauze, over which manual pressure is made for a short time for the purpose of diminishing parenchymatous oozing. After removal of the compress, additional bleeding vessels are secured. The anterior part of the amoutation surface is treated in a similar manner; after the removal of the anterior constrictor, but few, if any, additional ligatures will be required here. The double constrictor presents many advantages in the prevention and treatment of hemorrhage in this amputation. Slipping of the constrictors is an impossibility, and they control the hemorrhage absolutely, while their proper use divides the wound into two halves, each of which is separately treated, thus reducing the loss of blood to a minimum.

The following conclusions represent the principal advantages of the bloodless amputation at the hip-joint as described:

- 1. Preliminary dislocation of the head of the femur, and clearing the shaft of this bone of all soft tissues down to the proposed line of amputation through an external straight incision, requires less time, and is attended by less hemorrhage and shock, than when this part of the operation is done after circular amputation, as advised by Von Esmarch and others.
- 2. The external straight incision is the same as Von Langenbeck's incision for resection of the hip-joint, differing only in length.
- 3. After dislocation of the femur, the soft tissues are tunnelled with a hæmostatic forceps, which is entered through the external wound on a level with the trochanter minor to a point on the inner aspect of the thigh behind the adductor muscles and about two inches below the ramus of the ischium, where a counter-opening two inches in length is made.
- 4. The bloodless condition of the limb should be secured by elastic compression or vertical position prior to tying the elastic constrictors.
- 5. An elastic tube three-quarters of an inch in diameter and about four feet in length is grasped with the forceps in the centre and drawn through the tunnel made by the forceps.
- 6. After dividing the elastic tube in the centre, the base of the thigh is constricted by

drawing firmly and tying the anterior constrictor in front of the anterior section, while the posterior constrictor, after being drawn tight behind the posterior section, and having its two ends crossed, is made to encircle the whole thigh, when the ends are again drawn firm and tied or otherwise secured above the anterior constrictor.

- 7. A long and a short oval cutaneous flap should invariably be made in all amputations at the hip-joint.
- 8. In preference a long anterior and a short posterior flap should be selected.
- 9. The transverse section through the muscles should be somewhat conical in shape, the apex of the cone corresponding to the tunnel made by enucleation of the upper portion of the shaft of the femur.
- ro. Resection of the end of the sciatic nerve and ligation of all vessels that can be found should be done before the removal of the constrictors.
- 11. The femoral arteries should be secured by a double catgut ligature half an inch apart, the one on the proximal side including also the accompanying vein.
- 12. The posterior constrictor should be removed first, and all hemorrhage arrested by ligation and compression before the anterior constrictor is removed.
- 13. The upper part of the wound corresponding to the acetabulum should be drained with an iodoform gauze tampon, and the remaining part of the wound by one or more tubular drains.

### GALLANOL IN PSORIASIS AND ECZEMA.

CAZENEUVE and ROLLET (Lyon Mèdical, No. 15, tome lxxii., 1893), after a review of the various remedies employed in psoriasis and eczema, none of which have proved satisfactory, warmly commend gallanol, the anilide of gallic acid, as a valuable application, because of the reducing and antiseptic properties it possesses. Moreover, it is harmless, ½ drachm administered to man being without toxic effect. It is but slightly soluble in water, and hence can be absorbed by the skin to but a slight extent.

Gallanol is obtained by boiling tannin or gallotannic acid with aniline. Dilute hydrochloric acid is added; crystals are separated and purified by a series of crystallizations in dilute alcohol. Gallanol thus obtained loses two molecules of the water of crystallization at the boiling-point. It is white, crystalline, of a slightly-bitter taste, and will not distil without

decomposition. It is very soluble in boiling water, alcohol, and ether, but insoluble in benzine.

The drug is employed in powder and in salves. As a powder, it is white, impalpable, and, when pressed between the fingers, somewhat adhesive. A powder made up of gallanol and tale dusted upon chronic eczematous patches quickly dries these and calms the itching. As a salve, it is mixed with vaseline in the proportion of 3 to 10 parts. These can be applied to psoriasis lesions in the hair and on the face, or an eczema on the face, or involving the extremities. Its action in cases reported by the author is strikingly favorable. In some cases the lesions, after being cleansed of scales or scabs, were painted with a mixture of gallanol and chloroform or alcohol, then covered in with traumaticine (chloroform and gutta-percha); in other cases, although the lesions are somewhat inflammatory, they are simply painted with traumaticine and gallanol. This drug causes no redness, inflammation, or pigmentation of the skin, hence can be used in lesions of the face. It does not stain the linen and has no odor. In a week the skin-affections in which it has been used terminate in cure.

### TREATMENT OF TETANUS.

SCHWARTZ (La Tribune Médicale, 26 année, No. 14) reports four cases of traumatic tetanus coming under his observation. The first case was wounded by being thrown from a cart. The fingers of the right hand were crushed. The wound was dressed with antiseptic precautions, and an effort was made to preserve the injured parts. On the following day, however, the whole hand became acutely inflamed and general temperature ran up. After some efforts at drainage the forearm was amputated. days after this operation acute tetanus developed, death following in three days, in spite of the employment of chloral and morphine. In addition to the wound of the hand there was also a contused wound of the face.

The second case suffered from a contused wound of the thenar eminence. Cicatrization was complete. Twelve days after the accident the first symptoms of tetanus developed. Chloral and morphine were administered in full doses, and at the same time Bazelli's injections were driven into the forearm. In eight hours there was some improvement.

The third case had his leg broken by a dirtwagon. Fifteen days after the accident tetanus developed. This was treated by chloral and

subcutaneous injections of immunized horseserum. The patient recovered in a year.

The fourth case had his leg fractured by the wheel of a wagon. Five days later tetanus developed, and the patient perished, in spite of the use of chloral and horse-serum.

From a therapeutic stand-point it is interesting to note that in the first case amputation, practised before the first symptoms of tetanus, was not successful in saving the patient. It is true that there was at the same time a wound of the face which might possibly have been the seat of original infection. As to the injections of serum (painful and always occasioning marked hyperæsthesia), they did not help the patient, in whom tetanus developed in its most fulminant form. The rôle of such injections would seem to be rather prophylactic,—that is, they might be administered at the time of the first dressing of the wound infected by the earth.

Verneuil particularly insists upon rigorous antisepsis as a means of preventing tetanus, since thus are destroyed the septic brioles which accompany the bacillus of tetanus, and it considerably diminishes the virulence of the latter, even if it does not render them completely innocuous. In all cases wounds soiled by earth should be left open to enable the surgeon to treat them thoroughly by means of atomization of antiseptic solutions.

THE TREATMENT OF MALIGNANT TU-MORS BY REPEATED INOCULATIONS OF ERYSIPELAS, WITH A REPORT OF TEN ORIGINAL CASES.

Coley (American Journal of the Medical Sciences, May, 1893) has collected a table of thirty-eight cases of malignant disease in which erysipelas cured either by accident or intent. Of these thirty-eight cases the erysipelas occurred accidentally in twenty-three cases and as the result of inoculation in fifteen. Seventeen of these cases were carcinoma, seventeen cases were sarcoma, four either sarcoma or carcinoma. The immediate and final results were as follows:

Carcinoma.—Of the seventeen cases, three were permanently cured. In addition, one case of probable carcinoma (Hutchinson's) was well five years after the attack of erysipelas. Of the remaining thirteen, ten showed improvement, which, although temporary, undoubtedly added to the life of the patient in most cases. One case (Janike's) died, as a result of the erysipelas, on the fourth day.

Sarcoma.—In turning to sarcoma, we find

the curative action of the erysipelas even more marked. Of the seventeen cases of sarcoma, we find seven, or forty-one per cent., well and free from recurrence from one to seven years after the attack of erysipelas. Nearly all of these seven cases have a remarkable history.

The remaining four were as follows: The first (Biedert's) was a very large round-celled sarcoma, involving mouth, face, nose, and orbit of a child ten years of age. The features were greatly distorted, and the general condition so bad that death from exhaustion was anticipated soon. While in daily expectation of being obliged to do a tracheotomy, a severe attack of facial erysipelas occurred. The tumor disappeared, as if by magic, during the course of the erysipelas. The child recovered, and at the end of a year was perfectly well, with no trace whatever of recurrence.

The next case (Bruns's) was a melanotic sarcoma of the breast, with entire disappearance, and there has been no recurrence.

The sixth case (Bruns's) was a multiple sarcoma of the face that entirely disappeared after an attack of facial erysipelas, and did not return.

The seventh case (Kleeblatt's) was a lymphosarcoma of the neck, very large; the erysipelas in this case being the result of inoculation.

In addition to these seven cases there was one other, a probable sarcoma of the breast, that was cured.

Ten of the remaining eleven showed more or less marked improvement; in some cases the tumor entirely disappearing, and not recurring for several months.

One case died as a probable result of the erysipelas, which was in this instance accidental

To put the result still more briefly: In carcinoma,—seventeen cases,—three cures, seventeen and six-tenths per cent.; one death, five and nine-tenths per cent.; four sarcoma or carcinoma, two cured.

Grouping by themselves, then, the cases where the erysipelas was artificially produced, we find seven cases of carcinoma, one cure, or fourteen and three-tenths per cent; and eight cases of sarcoma, two cures, twenty-five per cent. These cases were as follows: Fehleisen, two; Kleeblatt, two; Busch, one; the remaining three cases being the author's.

These figures may then be taken to fairly represent the curative effect upon carcinoma and sarcoma in the worst cases; and when we reflect that in nearly every instance the tumor was not a primary growth, amenable to operative treatment, but either a recurrence after

operation had been tried and failed, or from its nature inoperable, then and then only are we in a position to fully estimate the importance and value of erysipelas as a curative agent.

We have purposely excluded in the foregoing analysis eight cases of the writer's treated by repeated injections of erysipelas cultures, which, without producing erysipelas, caused marked improvement in the tumors. These cases should be grouped by themselves, and they bring us back to the question regarding the nature of this curative principle, which, however variable its action, must be regarded as having a constant relation to erysipelas.

The clinical facts already mentioned, that a number of malignant tumors have disappeared as a result of an erysipelas in another region of the body, coupled with the very recent experiments of Professor Spronk and his co-workers in Leyden, settle the point beyond dispute. In the experiments referred to, twenty-six cases of malignant disease (eight sarcoma, eighteen cases carcinoma) were injected subcutaneously with the toxic products of the streptococcus of erysipelas, the germ itself having been destroyed and removed.

In every case the injections were made in parts remote from the tumor, usually the gluteal region. Nearly all of the cases of sarcoma showed marked improvement, and in some cases the tumor entirely disappeared. It is true, recurrence usually took place, yet in one case (Remsen's), a large inoperable sarcoma, the primary growth entirely disappeared, the secondary growths were reduced to very small size, and there had been no recurrence up to the publication of the paper.

The effect upon carcinoma was very slight, and only in one case was the beneficial action marked.

It should be noted that very small doses were used in these cases,  $\frac{1}{2}$  to 1 gramme.

In no case was the reaction very great, 103° F. being the highest temperature recorded, the condition usually becoming normal at the end of twenty-four hours. Spronk himself admits that better results have been obtained from larger doses, yet he preferred to err on the side of safety.

Coley began the treatment of his cases by repeated injections of fluid cultures more than eighteen months ago, and has used it in nearly all his cases. In most cases he injects deeply into the tumors themselves. The doses employed have varied with the age and virulence of the cultures, but he has aimed to obtain a good reaction, a temperature of 104° or 104.5° F. frequently following. The reaction has usually

subsided within thirty-six to forty-eight hours after the injection, unless erysipelas was produced. The effect upon the tumors was more marked in the cases of sarcoma than carcinoma, but all cases showed a cessation of growth and a more or less marked diminution in size. Several sarcomatous nodules, some nearly one inch in diameter, disappeared entirely. It is evident that in these cases the effects produced were chiefly due to the toxic products of the streptococci.

In view of these results, as well as those of Spronk, it may be considered definitely proved that a portion, if not all, of the benign influence rests in the toxic products of the erysipelas germ rather than in the germ itself. The fact that, thus far, the results from an attack of true erysipelas have been far more brilliant and permanent, prove that either the germ itself or its continued action plays an important rôle, or, what is quite as probable, we have not yet learned how best to isolate the toxic principles and to use them in the most efficacious doses. It is more than probable that sterilizing cultures by heat changes the chemical relations of the toxalbumins. The writer is at present making experiments with filtered cultures, the germs having been removed by means of a Kitasato filter, without subjecting the fluid filtrate to heat. If the virtue of the erysipelas lies entirely in these toxic principles, the treatment of malignant disease will be much simplified, as there will be neither the danger from the erysipelas nor the necessity for isolation.

In speaking of the dangers associated with erysipelas, Coley states that the term "erysipelas" has been used in a very loose way, including many cases of cellulitis and septic infection. He does not believe in the identity of the streptococcus of erysipelas and the streptococcus pyogenes, although acknowledging that the opposite opinion is held by many of the leading bacteriologists. Those who hold to the identity of the two germs base their opinion largely upon the close resemblance, morphologically and biologically, and they claim that the clinical differences are due to the different sites of infection and variations in virulence of cultures; that the same germ in the outer layers of the skin will produce true erysipelas; that injected deeply into the tissues it will cause cellulitis and multiple abscesses. During the course of the writer's experiments he has injected, upward of one hundred and fifty times, pure cultures of the streptococcus of erysipelas, of almost every degree of virulence, into the (human) tissues, superficially and deeply. In but two cases did an abscess follow, and in one of them a careful bacteriological examination was made of the pus (before it had become contaminated), and mixed cultures were found, the staphylococcus aureus being present with the streptococcus.

There appears to be good ground for believing that when suppurative processes are associated with erysipelas a mixed infection is present, and that there is a real and important difference between the germ of erysipelas and the streptococcus pyogenes, in spite of their close resemblance.

The fact that they are pathogenic for different animals respectively, and also their different action with reference to lactic acid, are other points against their identity.

Finally, the author concludes as follows:

- 1. The curative effect of erysipelas upon malignant tumors is an established fact.
- 2. The action upon sarcoma is more powerful than upon carcinoma,—in about the ratio of 3 to 1.
- 3. The treatment of inoperable malignant tumors by repeated inoculations of erysipelas is both practicable and not attended with great risk.
- 4. The curative action is systemic, and probably due chiefly to the toxic products of the streptococcus, which products may be isolated and used without producing erysipelas.
- 5. This method should not be employed indiscriminately until further experiments have proved its limitations.

# TREATMENT OF RINGWORM OF THE SCALP.

Eddowes (British Medical Journal, April 15, 1893) employs in this affection sulphur and vaseline ointment, one drachm to the ounce, olive oil, compound chrysarobin ointment, containing twenty-five grains of this drug to the ounce, the same proportion of ichthyol, and ten grains of salicylic acid. His plan of treatment is as follows: For the first week the sulphur ointment is applied daily. Hair to be cut as short as possible with scissors over the whole scalp. Scalp to be washed two or three times during the week with soap or soda and water. A cap to be worn night and day.

The second week the chrysarobin ointment to be rubbed well into a few patches, but not over too wide an area or in such a quantity as to run down the face, neck, or ears; the rest of the scalp to be dressed with the sulphur ointment. If the two ointments become mixed up a little it is of no consequence. A piece of oiled silk or gutta-percha tissue a little larger

than the hairy scalp is then placed over the ointment, and a tightly- or, rather, a closely-fitting skull cap is then fastened over all. All ointment is to be thoroughly wiped off the scalp and tissue, or oiled silk, and fresh ointment applied daily. The area to which chrysarobin ointment is to be applied must be regulated according to the condition of the skin and the comfort of the patient from day to day. If the skin be very intolerant of the remedy, it should be cleansed by wiping with tow or cotton-wool, and be dressed with the sulphur ointment in-If the chrysarobin be well borne, the area to which it is applied is daily extended till the whole scalp is dressed with it, but never for more than four days consecutively. At the end of four days in any case, and sooner if necessary on account of irritation, the sulphur is entirely substituted for the "dark" (chrysarobin) ointment. During the last night of the week the scalp is well oiled, next morning well washed with soft soap or soda and water, dried, oiled, and the patient brought for inspection.

This plan of treatment should be continued until a cure is effected.

The most important practical points were (1) thorough cleansing of the scalp before the employment of chrysarobin; (2) the removal of secretion and scales by means of the sulphur ointment and oil before redressing with chrysa-As Unna states, the skin should be brought back to its normal color before the chrysarobin is reapplied. This is a point of the highest importance. If any chrysarobin find its way on to the forehead, neck, or ears, the parts should be dressed with vaseline, zinc ointment, dusting powder, or, still better, with zinc gelatin and cotton-wool. The cap should fit closely and come well over the scalp, but not constrict any part.

Dr. Phineas S. Abraham stated that the general experience still was that certain cases of tinea tonsurans were as intractable as ever. After employing many methods, he has during the last few years used an inunction night and morning, by means of a stiff brush, of a pomade containing lanolin and vaseline, of each half an ounce, carbolic and salicylic acids, of each half to one drachm, the scalp being shaved occasionally, kept closely cropped, and always greasy. A cap to be constantly worn (but changed, and, if linen, boiled daily), and the head to be washed once a week with an antiseptic soft soap. With the more obstinate cases he employed occasional applications of carbolized liniment, or of iodine, or mercuric chloride or iodide, grains one to two, can be added to the above ointment. He objected

to Unna's method on account of time consumed and the special manipulations required in carrying out the details. He also believes prophylaxis insufficiently attended to.

Dr. Liveing called attention to the importance of children carrying their own combs and brushes when going to hair-dressers.

Dr. Harrison spoke of the difficulty in curing every case of ringworm, because there were often isolated fertile stumps existing.

Dr. Norman Walker thought Unna's chrysarobin treatment was no better than any other treatment, and that it, like salicylic acid, owed its use mainly to reducing power. As regards mercury, while not greatly in its favor, he thought it useful, but considered copper should have more frequent trials. He agreed with Dr. Eddowes that there were many varieties of ringworm, and considered that some information as to prognosis might be got from differentiating varieties.

### PARENCHYMATOUS INJECTIONS IN TON-SILLITIS.

HEUBNER (La Médecine Moderne, 4 année, No. 32, 1893) states that investigations have shown that there always exists in the tonsillar crypts a variety of fungous growths. Ordinarily these occasion no trouble, but following an erosion or other cause of local irritation they occasion inflammation usually called follicular tonsillitis. If one of these swollen tonsils is injected with a solution of carbolic acid (2 to 100) the action is usually prompt and favorable. Eight drops of this solution may be employed. The temperature falls almost immediately, and within the hour the patient feels entirely well. A second is rarely necessary.

Sahli also injected carbolic acid in cases of follicular and diphtheritic tonsillitis. He has recently employed trichloride of iodine, a chemical compound which is powerfully antiseptic and not at all toxic. In diphtheria the injections are made into the false membrane and beneath it into the parenchyma of the tonsil. A solution of the strength of 2 to 1000 is used. The injections occasion very little pain.

Heubner stated that he had used injections of carbolic acid for thirteen years, and that this therapeutic means had distinctly lowered his mortality in cases of scarlatina and dipththeria.

PLASTIC OPERATION FOR CURE OF DE-FORMITY OF THE PENIS RESULT-ING FROM GANGRENE.

KOERTE (La Médecine Moderne, 4 année, No. 32, 1893), for the cure of deformity fol-

lowing gangrene of the penis, with loss of a considerable portion of the cavernous bodies, filled in the space which had been destroyed by making a bridge of tissue in the scrotum, beneath which the penis was drawn. Eight days later one end of the bridge was divided. Six days later the other end of the pedicle was cut. The whole of the flap, which became adherent to the raw surface of the penis, retained its vitality.

Hirschberg, in transplanting large flaps, first applies Esmarch's bandage, then flagellates the portion of the skin destined for transplantation. The flap is freed, with the exception of the pedicle, and sutured in position. Next the Esmarch bandage is removed, and the flap becomes very hyperæmic. The pedicle is divided, the flap finally fitted in its permanent position, and a light pressure bandage applied. After five days the flap looks as though it were well nourished, then the epidermis becomes somewhat dark; this disappears in a few days, the skin regains its normal appearance, and cure is prompt.

### Reviews.

A HAND-BOOK OF LOCAL THERAPEUTICS. General Surgery, by R. H. Harte, M.D.; Diseases of the Skin, by Arthur Van Harlingen, M.D.; Diseases of the Ear and Air-Passages, by Harrison Allen, M.D.; Diseases of the Eye, by George C. Harlan, M.D. Edited by Harrison Allen, M.D.

Philadelphia: P. Blakiston, Son & Co., 1893.

We are told in the preface of this compilation that one of the chief reasons for its production is that no text-book is available in which the local action of drugs is not subordinated to their general action. We are also told that the book is intended more as a guide to treatment than as a disquisition on local medication. This effort has been adhered to, although in some respects the book falls short of what we expected.

There is no doubt that the work has been most carefully edited, and that the statements it contains are correct as statements, but we miss from its pages that which we most hoped to glean,—namely, information concerning the proper use of a large number of remedies which are employed in local therapeutics. Most of the year-books tell us of the recommendations which have been made by clinical experimenters, and also give us information as to the strength of the solutions or doses which should be employed. We had hoped that this book

would not only contain such information, with the good separated from the bad, but that the editors would from their rich experience add that they had found this or that recommendation of a foreign author serviceable in their own hands.

A book on local therapeutics demands above all other things the most absolute and definite statements as to exactly the condition indicating a given drug, and equally absolute statements as to the dose or strength of the drug which should be employed, and such this book rarely gives. It is true that there are many prescriptions through these pages giving the quantities of the various medicaments, but with them there is too often no definite statement of the exact time of their application. The articles on the eve are not open to this objection, much care being taken to make concise and definite statements wherever it is possible. Even here, however, personal preferences are not expressed as frequently as is desirable.

To those desiring a concise, but by no means complete, statement of recent literature in local therapeutics, this book will be useful. To those who wish to have in their hands a book which will tell them the best thing to do and the best time to do it, it will also prove of service.

FERMENTATION, INFECTION, AND IMMUNITY. A NEW THEORY OF THESE PROCESSES. By J. W. McLaughlin, M.D.

Austin, Tex., 1892.

This book discusses in a manner which is somewhat too deep for the ordinary practitioner the questions indicated by its title. The work shows a very considerable amount of thought upon the subject of which it treats, but we fear will not receive the attention which the author's labors deserve.

A PRACTICAL TREATISE ON MATERIA MEDICA AND THERAPEUTICS, WITH ESPECIAL REFERENCE TO THE CLINICAL APPLICATION OF DRUGS. By John V. Shoemaker, A.M., M.D. Second edition. Revised. In two royal octavo volumes. Vols. I. and II.

Philadelphia and London: The F. A. Davis Publishing Company, 1893.

In the publication of the second edition of his useful book, Dr. Shoemaker has taken pains to thoroughly rewrite and remodel the first volume and to add many points of interest to Vol. II. We notice that in this second edition he still employs the word "officinal," although the Convention for the Revision of the Pharmacopæia for 1890 directed that the word "official" should take its place, and in the Pharmacopæia which will appear in a few months this alteration will be made.

The first volume contains, in addition to the subject of electro-therapeutics, classification of remedies, prescription-writing and formulæ, chapters upon climatology, diet and disease, hypnotism and suggestion, and even one upon music as a therapeutic measure.

In Vol. II. drugs are considered, and the pages are dotted by numerous prescriptions illustrating what Dr. Shoemaker believes to be the best way of prescribing the various remedies. In this department the book is unusually strong, but in that of physiological action we think it is hardly as complete as it should be, particularly when so thorough a discussion of other matters concerning therapeutics has been introduced as to necessitate the publication of the work in two volumes.

The alphabetical arrangement is followed, and while a number of new drugs have been introduced into the book, it has been found necessary to add a number of others in an appendix. We notice that the author has taken "the bull by the horns" in the matter of recommending preparations of drugs made by special firms or by special processes, and does not hesitate to indicate the manufacturers from whom the remedies should be obtained. many instances he mentions preparations which, while they are only sold to the medical profession, are practically proprietary, in the sense that they cannot be obtained from any one save their originators. We do not mention this in the way of criticism, but simply as a matter of interest, as it indicates that this author, at least, believes that where he has found a preparation useful it matters little to him what its source may be.

No doubt the second edition of Dr. Shoe-maker's book will be as popular as was the first.

INDEX CATALOGUE TO THE LIBRARY OF THE SURGEON-GENERAL'S OFFICE, UNITED STATES ARMY. Authors and subjects. Vol. XIII. Sialagogues to Utugin. Washington,: Government Printing-Office, 1892.

Vol. XIII. of this magnificent monument to the literature of American medicine and surgery, containing, as it does, records of practically the entire medical literature of the world, marks another advance in the work of its editor, Dr. John S. Billings. There is nothing better for the reviewer to do than to call the attention of the profession to the great value of the work which is done in the Surgeon-General's office of the United States army. The work—which gives the American medical profession the best reference catalogue of medical books, and also places all medical writers in for-

eign countries under a debt of gratitude to Uncle Sam—is one of which we may well be proud.

A MANUAL OF CHEMISTRY, INORGANIC AND OR-GANIC. By Arthur P. Luff, M.D. Illustrated. Philadelphia: Lea Brothers & Co., 1892.

This book is one of a series, republished in this country, of small text-books for medical students, and is a member of the same list as the three volumes of Treves's "Manual of Surgery" and Klein's "Elements of Histology."

There are so many useful publications of this kind by American authors that Dr. Luff's book can hardly have a large sale in this country, although its contents render it deserving of such patronage.

THE DISEASES OF THE NERVOUS SYSTEM. A TEXT-BOOK FOR PRACTITIONERS AND STUDENTS. By Ludwig Hirt. Translated by August Hoch, M.D., and Frank R. Smith, M.D. With introduction by William Osler, M.D. Illustrated.

New York: D. Appleton & Co., 1893.

We have already reviewed in the columns of the Therapeutic Gazette in the last few months a number of very good books upon diseases of the nervous system, and the author of the present work begins his preface by a statement recognizing the fact that a vast number of text-books on nervous diseases already He thinks, however, that perhaps he has been able to present the profession with the facts concerning diseases of the nervous system in a somewhat different light from that which other authors have given them, and it is quite true that in the arrangement of the work he has departed from the common customs of authors who are dealing with nervous affec-Thus, very few members of the profession would expect to find locomotor ataxia classed under diseases of the general nervous system rather than among those of the spinal cord. Of course it is true that locomotor ataxia as a disease is more wide-spread, in one sense, than the mere lesions which we find in the posterior columns, but it is always of doubtful advantage to disassociate in the mind of the student, at least, the characteristics of the disease from the area in which its chief lesion is found. Scientifically, therefore, objection cannot be made to these methods of Dr. Hirt. of which we have given an example, although practically we think that such a classification renders the study of the nervous diseases more difficult. Most of the chapters are increased in value by copious bibliographies. The diagrams and illustrations are unusually good, and the translation has evidently been performed with accuracy and at the same time without

rendering the English involved. The book is partially Americanized, not only by its translation, but also by the preface of Dr. Osler, and can be cordially recommended with those of Dana and Gray.

DISEASES OF INEBRIETY.

New York: E. B. Treat, 1893.

The book before us bears the following titlepage: "Disease of Inebriety from Alcohol, Opium, and other Narcotic Drugs: Its Etiology, Pathology, Treatment, and Medico-Legal Relations. Arranged and compiled by the American Association for the Study and Cure of Inebriety." No name of either author or editor is appended. However, in the introduction we learn that inasmuch as the demand for various papers by members of the American Association for the Study and Cure of Inebriety, and which were published at various times in the Journal of Inebriety, has been increasing, the Association, at its November meeting in 1892, resolved that its secretary be authorized to prepare a volume which shall contain the most reliable conclusions and studies by eminent authorities of all phases of the diseases of inebriety up to the present time. We are told, further, that this volume is in conformity with this resolution, and that it simply means to give the reader the best papers upon these subjects which have appeared. Further, that it is intended to represent the work of the Association and the character of the papers and discussions which have appeared in its journal. The introduction is signed by Dr. T. D. Crothers, secretary.

Some thirty-eight chapters upon various interesting topics directly connected with inebriety follow, but we are very much disappointed that not one of these chapters is signed by its author.

Notwithstanding the composite character of the book, the subjects are as systematically considered and as properly spaced as though they had been treated by one hand. The earlier chapters deal with the ancient and modern history of inebriety, the various forms of inebriety, the exciting causes, the relations between inebriety and other diseases, heredity, pathology, and treatment. Finally, the duty of the State in the care of inebriates, and general questions of irresponsibility in inebriety, are considered.

The position assumed throughout the book is that inebriety is a disease which should be studied and treated just as any other disease is studied and treated. The distinction is drawn between the accidental inebriates, the periodic inebriates, and the chronic inebriates. They are, in short, the views already made familiar to us chiefly by Dr. Crothers.

One of the most important questions of the present day is the care and control of inebriates, especially their control. The following suggestions are made:

"The inebriate should be arrested, if found intoxicated upon the street or any public place, or upon a warrant issued on due complaint of his family, or in case they failed to do their duty, by a committee of reputable citizens of the ward in which the inebriate is a resident, or by the officers of said ward. A warrant should be issued on complaint from any of said parties, by the proper justice, and the inebriate arrested.

"Proper testimony should then be secured as to facts concerning his inebriety from reputable medical and other sources. He should then be sent to an inebriate reformatory hospital or work-house, for the institution should include all these features. We are dealing with a diseased person, not a criminal, but as a pauper inebriate, without friends, or, if he has friends, without means.

"The pauper inebriate is now duly arrested. He must be restrained and controlled for some definite time in some institution. The period should not be less than one year; made longer, if necessary, by recommittal. The institution to which he is committed should be placed in the suburbs of the city or town, with convenient access to it. Abundant grounds should surround the building, or, better still, a farm should be the site of its location. Out-door occupation. so beneficial in the treatment of the chronic insane, would be no less so in the case of the A competent medical superintendent, with suitable assistants, could readily conduct such an institution. Its inmates would be chronic inebriates; all insane persons, or those incurable from other diseases, should be sent to their proper asylums or hospitals."

Unfortunately, not only are the institutions necessary to carrying out this plan lacking, but even the laws are so framed that it is impossible to restrain a person who is an inebriate. Patients may, and sometimes do, commit themselves voluntarily to insane hospitals, but there is no provision of the law by which an inebriate can be forcibly detained. It is, perhaps, not too much to hope that some day State hospitals for the treatment of inebriety will become a reality, and that laws will be enacted which will enable the State to restrain the inebriate for a period sufficiently long to bring about a durable result.

PSYCHOPATHIA SEXUALIS, WITH ESPECIAL REFERENCE TO CONTRARY SEXUAL INSTINCT. By Dr. R. von Krafft-Ebing. Authorized Translation of the Seventh Enlarged and Revised German Edition. By Charles Gilbert Chaddock, M.D.

Philadelphia and London: The F. A. Davis Publishing Company, 1893.

This book of Krafft-Ebing, founded on wide experience, admirably written, and thoroughly scientific, is perhaps destined to accomplish some good by throwing light in dark places and popularizing knowledge in regard to phases of venereal perversion hitherto unsuspected even by the medical men. It is, however, a twoedged weapon, and will certainly accomplish much harm by suggesting means and methods of sexual indulgence to those who, without such knowledge, might have remained embryo perverts. It is perhaps true that facts, however revolting, should be known, and if it is desirable to publish such facts as are found in this book, it probably could not have been done with closer adherence to the true scientific spirit than is observed by Krafft-Ebing. would seem, however, even to the liberal reviewer, that in many portions of the work there is an unnecessary dwelling on filthy details, probably rendered more conspicuous by being expressed in the Latin tongue. It may be true that this book will do more good than harm. Judging from the effect produced on a large medical class into whose midst this work was introduced at the busiest time of the year, this assertion could be disputed.

The motives of its author in putting it forth are not to be questioned. The translator has ably fulfilled his part, and the book now stands in the English tongue as a mine of information to those who would seek special knowledge of sexual perversion from a medico-legal standpoint, as a reliable guide-book to those in whom the sexual instinct is abnormally developed.

MODERN GYNÆCOLOGY. A TREATISE ON DISEASES OF WOMEN. By Charles H. Bushong, M.D. Illustrated. New York: E. B. Treat, 1893.

This book, the author states, is not written from the stand-point of the specialist, but rather from that of the family physician. The author states that there is nothing in the routine work of gynæcology requiring more skill than a case in general medicine. The instruments and appliances are few, and a knowledge of their use is readily acquired. He states that the effort of this book is to place before the physician a clear and common-sense statement of the various diseases of the female sexual organs, to indicate in detail the methods of treatment that can be applied by him, and also to

indicate in brief the methods requiring the aid of an ably-trained consultant of larger experience.

The book opens with an excellent chapter on physical examination. Amenorrheea is classified as primitive and acquired. This chapter is followed by those on scanty menstruation, amenorrheea, and metrorrhagia; dilatation and curetting are described in this relation.

Under diseases of the vulva the statement is made that irritation of the clitoris is the cause of nymphomania in the female, and that its removal will usually cure the habit at once. In this opinion operative surgeons of wide experience will not be entirely in accord. the diseases of the vagina is mentioned vaginismus, the treatment of which is to be conducted by the wearing of a vaginal tube until all evidences of spasm have disappeared. With this therapy most gynæcologists would not be content, since the spasm characterized by the name vaginismus is nearly always due to irritation near the neck of the bladder. Gonorrhœal vaginitis is stated to be very common. opinion of genito-urinary experts is quite opposed to this view.

Metritis is briefly but very sensibly discussed, and there is a full and most satisfactory chapter upon the proper appliances to be employed in cases of uterine displacement. Diseases of the tubes and ovaries, and fibroma and carcinoma of the womb, pelvic hæmatocele, and sterility receive due attention.

Taken as a whole, this book will be found a safe guide for the general practitioner.

# Correspondence.

#### LONDON.

#### (From our Special Correspondent.)

The London Hospitals.—The Throat Department at St. Bartholomew's.—Following up my plan of presenting the readers of the Therapeutic Gazette with a short outline of the various clinics of London, I purpose this month to give an account of the working of our throat department at St. Bartholomew's. Instituted in 1878, and placed under the care of Dr. Lauder Brunton, F.R.S., it began its work at a time when the laryngoscope had been seen by only a very few of the medical men of the day, and when experts in its use, in this country at least, were still fewer. At this time I think I am correct in saying that there were not more than one or two laryngoscopes

in the hospital; and even in 1882, when the department had been placed under the care of Mr. Butlin, the importance of a knowledge of throat work was by no means fully appreciated by the students.

In a paper which appeared at about that time in the "Hospital Reports," it was stated that the average of students in attendance did not exceed ten at any one time, and the clinic was held only once a week. Of course this was accounted for by the fact that the subject was not obligatory, and students preferred to spend their time in studying subjects which would stand them in better stead at their examinations. Now all this is changed. Laryngeal cases are seen every Tuesday and Friday, and there is considerable eagerness among students to learn all that there is to be learned in this department.

The Staff.—The staff consists of the surgeon, Mr. Bowlby, assisted by two senior assistants, qualified men, and twelve others chosen from among the senior students. The senior assistants, having already worked for at least three months in the department, are able to give the surgeon a great deal of assistance, as well as to help the dressers in acquiring a familiarity with the use of the laryngoscope, etc. Of course the dressers when first appointed are able to do but little. It is their duty to obtain a history of the cases which present themselves, to endeavor to make a diagnosis, and after this to submit their case to the surgeon, who then takes the opportunity both of correcting their diagnosis, if necessary, and of carrying out or directing the course of treatment to be followed. A diligent student will thus rapidly become fairly proficient in recognizing the more common throat ailments. Other students of the hospital and also qualified men are encouraged to come and gain experience at the same time, and a most instructive afternoon can be passed in this manner.

The Rooms.—Up to the present it has not been deemed necessary to devote a room solely to throat work, and the clinic is held in two of the smaller rooms which lead from the large waiting-hall of the Casualty Department described in the last letter. The walls of one of the rooms are painted black, and are divided up by partitions into sections, each being fitted with chairs and an Argand lamp with bull'seye front for examinations. Dressers and visitors are encouraged to make an examination of all the cases which present themselves, and, although the accommodation is somewhat limited, yet a good deal can be seen in a single afternoon. Of course there is an undoubted

advantage in having a strong light for the examination of throats, and it would be a distinct improvement if the electric light were introduced; but still the lighting accommodation is fairly good, and hopes are entertained that it may be shortly remodelled and the electric light installed.

The Cases.—The number of these has during the last few years increased very largely. They are not, of course, all diseases of the throat, many of them being nasal affections, and others of a merely trivial nature; still, there is a goodly sprinkling of interesting cases. While catarrhal affections take the lead, affections of the pharynx and tonsils, tubercular and syphilitic cases, paralysis of the cords dependent on various conditions, and cases of tumor are all well represented. With regard to these last cases it is a remarkable observation that the tumors of the larynx which present themselves appear very seldom to be innocent, those of a malignant character largely predominating.

Tumors are not, however, so common as might be expected, for Mr. Bowlby tells me that during the last two months he has had to treat only four cases,—an average of one a fortnight.

I now proceed to give a somewhat more detailed description of certain forms of treatment adopted, as this is probably the best way to give an insight into the teaching of the clinic.

Tonsillotomies.—Tonsils are not removed merely because they are enlarged, but for one or more of the following reasons: Frequent tonsillitis, pain, deafness, difficulty in swallowing, loud snoring or difficulty in breathing, thickness of speech, or imperfect development of the thorax. They are never removed while they are actually inflamed. In nearly all cases the Mackenzie guillotine is the instrument used; it is simple, efficient, and does not easily get out of order. When, however, the tonsil is so elongated that it will not fit into the ring of the guillotine, it is then necessary to employ a guarded bistoury. An anæsthetic is not generally necessary, but in the very young and very nervous one may be employed. Though severe hemorrhage rarely occurs, one is always ready with torsion forceps in case such a thing should happen. To guard against bleeding after the patient has left the clinic, a gargle of "tanno-gallic acid" is given him to take with him, with directions to sip a teaspoonful if bleeding should occur.

> Acid. tannic., gr. ccclx; Acid. gallic., gr. cxx; Aq., 3i.

Nothing more serious than a slight attack of inflammation is likely to follow the removal.

Polypi.—For the removal of these Mr. Bowlby tells me that he now much prefers to employ the cold-wire snare, and to remove the growths by traction rather than by means of Schech's galvano-caustic loop. He is of opinion that they are more thoroughly removed when torn out in this manner, and that there is, therefore, less risk of recurrence. The objection to the cold-wire snare is the hemorrhage it causes and the force required to pull away the larger polypi; but even in these respects it is a superior instrument to either the guillotine or the polypus forceps, especially for the removal of multiple polypi. In using the cold or the hot snare the points to be remembered are the following: Get a good light through the speculum, preferably one of the pattern advised by Lennox Browne (vide Fig. 1). Next bear in





mind the exact position and shape of the polypi, and remember, on introducing the loop, that it is unnecessary to have this any wider than the space between the turbinated bones and the septum nasi. A narrow loop, just wide enough to touch the bones on either side, is the best, and it should be long in order to secure the elongated growths. Neither injections into the growths nor the insufflation of powders, etc., are ever recommended as methods of treatment.

Empyema of the Antrum.—The main difficulty with this affection lies generally in its diagnosis. Various methods have been tried, and the mode recently recommended, of transillumination, has occasionally been useful. But the following method, beautiful in its simplicity, bids fair to replace all others: A very fine and long trocar and canula is passed along the floor of the anterior nares on the suspected side for an inch and a quarter. The handle of the instrument is then carried horizontally inward towards the middle line as far as possible, and the trocar is then made to penetrate the mucous membrane and thin layer of bone which separates its point from the cavity of the antrum. trocar being withdrawn, water is injected through the canula and escapes through the nares, being caught in a bowl. It can then be at once seen whether it returns mixed with pus or clear. Needless to say, the nostrils should first be carefully cleared from all secretions. No difficulty has ever been met with in performing this perfectly simple and very satisfactory diagnostic operation, and no harm results even if the original suspicions should prove incorrect.

Hypertrophic Rhinitis .- In obstinate cases of this affection the most satisfactory treatment is to cauterize the mucous surface of the hypertrophied turbinated bone. This is done either by means of chromic acid fused on to the end of a probe and applied to the mucous membrane, rendered insensitive by means of cocaine, or else the actual cautery can be used, employing one of Schech's neat little flat galvanocaustic burners. As Schech's apparatus is not likely to be in the possession of most of the men when they come to practise on their own account, they are encouraged to make more frequent use of the chromic-acid method, which requires no special apparatus. Schech's apparatus is also of great service in the treatment of chronic granular pharyngitis, when this condition defies more moderate measures, but a treatment which is found to be of great service in many such cases is to paint the pharynx daily with the following iodine solution:

> R Iodine, gr. vi; Potass. iod., gr. xx; Ol. menth. pip., mv; Glycerin to 3i.

This formula, which was first recommended by Mandl, may be altered as to the proportion of iodine, remembering at the same time to alter also the amount of potassium iodide, according as a stronger or weaker solution is tolerated.

Tumors on the Cords.—These are, as I have already stated, not often seen. When they do. however, require removal, the instrument employed at the present time is a very ingenious pair of forceps, introduced into this country by Dundas Grant. The great difficulty in removing tumors situated on the edges of the cords is due to the fact that immediately the ordinary laryngeal forceps come in contact with the growth the cords at once become drawn together, rendering it nearly impossible to seize the tumor. With Grant's forceps this closure of the cords is rendered impossible by a special shape of the blades. It will be seen from the accompanying sketch (Fig. 2) that the beak of the instrument is so arranged that it can be passed right down between the vocal cords without harm. When once in this position it does

not in the least matter if the cords do close upon the blades; in fact, I am assured, both by Mr. Bowlby and Dr. Grant, that the more firmly the cords meet the easier is it to effect the removal of the tumor, and from the shape of the blades there is no risk of removing anything save the growth.

I may mention in passing that it is the custom at St. Bartholomew's in nearly all cases of operations on the larynx to employ a spray of cocaine to produce anæsthesia. This is found quite efficient and far less unpleasant to the

imposing method is now practised, the hightension electricity from the large Wimshurst machine being called into requisition. The patient being placed on an insulated stool and connected with one pole of the machine, sparks are then taken from his larynx. This unpleasant operation is not discontinued until he can count twenty in an audible voice. Seldom more than four sittings are required to effect a complete cure.

Adenoid Vegetations.—It has long been the practice in the hospital to treat these by a thor-



patient than employing the laryngeal brush. Up to the present not a single case of cocaine-poisoning has been observed as the result of these applications, although this has been urged as an objection to them. Of course, when it is a question of producing anæsthesia of the naso-pharynx, cocaine is then brushed on in ten-percent. solution, as the spray is not then generally so efficacious.

Functional Aphonia.—This affection is often seen in the department, and generally yields readily to treatment. Formerly it used to be the practice to pass the laryngeal electrode and turn on the current from a battery. This method succeeded in a fair proportion of cases, but recurrences were also frequent. A more

ough removal at a single sitting. The patient is anæsthetized by chloroform and placed on his side in a good light, anæsthesia being maintained during subsequent manipulation by means of the tube and air-ball devised by Mr. Mills. A strong gag is then placed in the angle of the mouth, and the finger introduced and carried all over the affected surface in order to ascertain the exact position of the growths. It is generally best to attack the neighborhood of the Eustachian tube first, especially if deafness be complained of, as the granulations in this position are apt to be overlooked at a subsequent stage, when the pharynx is full of blood-clot. The removal of these is generally effected either by the finger-nail or by means

of Meyer's ring-knife introduced through the anterior nares. The larger growths are removed by Loewenberg's forceps, an instrument which looks far more difficult to use than it really is. The chief precaution in using this instrument is to avoid catching the uvula or the septum nasi. The first may be prevented by always being careful to see both the uvula and soft palate in front of the forceps when these are in position; the other accident may be avoided by keeping the finger in the pharynx while the forceps are being used. The bleeding is generally very profuse, and it is for this reason that the lateral position of the patient is recommended, as it is then much more easy to prevent swallowing of blood, the clot being from time to time scooped out from the cheek. When the operation is completed it is surprising how rapidly the bleeding ceases. After the operation the patients are almost invariably kept for some time in the hospital, as although the after-treatment may be described generally as doing nothing, it is even more important than the manner of operation. The child is put to bed, and rigorously protected from all chance of catching cold. If the weather is at all cold a fire is kept up night and day. No further treatment, either local or general, is required, save in cases of delicate children who have lost much blood at the operation, and in these cases it is well to commence the use of small doses of iron after the first four days, along with cod-liver oil. It is not safe to allow the patient, however well he may feel, to leave his bed till a week after the operation. Of course all these precautions are taken in view of the risk incurred of inducing suppuration or, at least, inflammation of the middle The great advantage of the operation at a single sitting, as it is practised at St. Bartholomew's, is, first, that no after-treatment is required; and, secondly, that the length of the entire treatment is reduced from several weeks. as was required by the operation at several sittings, to at most ten days or a fortnight. As for the question of the advisability of using an anæsthetic, it seems certain that the ease with which the growth can be thoroughly removed more than compensates to the patient and surgeon for the increased hemorrhage which its use entails.

In conclusion, I would repeat that, although the department presents no magnificence of outward show, as is the case in some of the special throat hospitals, the amount of material available for clinical teaching is not by any means to be despised. Lastly, I have to acknowledge the great courtesy of Mr. Bowlby, who has given me most of the information contained in the foregoing account.

T. J. BOKENHAM.

THE VALUE OF ETHEREAL ANTISEPTIC SOAP IN CLEANSING WOUNDS— REPORT OF A CASE.

To the Editors of the THERAPEUTIC GAZETTE:

DEAR SIRS:—On Monday, the 24th of April, I was summoned late in the evening to see a boy who had, while romping, fallen upon a barbed-wire fence and lacerated his face at the angle of the left jaw to the bone, tearing the structures badly for at least two inches.

In the wound were several small cinders. which I carefully removed with fine forceps, and, having thoroughly syringed the parts with carbolized warm water, I sutured and dressed the same antiseptically. The patient was instructed to call at my office the following day. I was extremely dubious about securing union of the coaptated surfaces, and was not surprised the next day to find the parts looking scarlet and a little pus present, the sutures appearing of not much utility. I used Parke, Davis & Co.'s ethereal soap freely on absorbent cotton, afterwards cleansing the parts with water, dressed with moist carbolized gauze, etc. The next day a nicer, cleaner wound was never seen. I redressed same as above, using the same precautions, and a day later removed the sutures. Union was perfect, and the results beyond all expectation.

In injuries to the scalp I have been a user of the ethereal soap,—always suture,—and have yet to meet with a case where erysipelas was a complication.

Ethereal soap is, in my opinion, one of the best adjuncts to the armamentarium of the surgeon.

Yours truly,

C. H. POWELL, A.M., M.D. No. 2 Lewis Place, St. Louis, Mo.

#### CORRIGENDUM.

In the THERAPEUTIC GAZETTE for May 15, 1893, p. 322, for "The solution is made by dissolving r ounce of the chlorate of potassium in 2 ounces (56 cubic centimetres) of water," read "The solution is made by dissolving 1 ounce (28 grammes), by weight, of the chlorate of potassium in 20 fluidounces (560 cubic centimetres) of water.". The dose quoted from Harkin's article, in Bull. Général de Thérapeutique, December 30, 1892, is an unusually large one.—Eds.

# Therapeutic Gazette.

Whole Series, Vol. XVII. DETROIT, MICH., PA., July 15, 1893.

Third Series, Vol. IX. No. 7.

#### PAGE CONTENTS. Case of Strychnine-Poisoning, Death en-Temporary Resection of the Symphysis suing unusually long after Onset of as an Aid to the Extirpation of Tumors Original Communications. Symptoms...... 473 of the Bladder ..... 498 PAGE Treatment of Myxœdema with Internal A Case of Complete Rupture of the Enteroclysis in the Summer Diarrhosa of Administration of Thyroid Gland...... 474 Urethra.... Children, with a Report of Seventy-Early Extirpation of Sarcoma of the The Treatment of Chlorosis by Iron and eight Cases, together with the Results Kidney......493 of Laboratory Investigations. By R. Death from Poisoning by Eucalyptus.... 48e The Sacral Method of Extirpating the E. Müller, B.Sc., M.D...... 433 A Fatal Case of Myxcedema which had Uterus...... 493 Creosote in Tuberculosis Pulmonum. By The Modern Technique of Laparotomies 493 been treated by the Use of the Thyroid J. T. Whittaker, M.D..... 438 Osteoplastic Closure of Defects of the Gland ..... The Therapeutics of Croupous Pneumo-A Special Form of Ophthalmia to which Skull...... 493 nia. By J. A. Larrabee, M.D...... 444 Hop-Pickers are liable...... 483 Experimental Contributions to the Sur-The Class of Cases in which we may exgery of the Abdomen..... 494 The Sterilization of Ophthalmic Solutions 483 pect Good Results from Excision of the The Question of Immunity and the Value Ten Years' Experience in Cataract Op-Membrana Tympani and Ossicles. By of Blood-Serum in preventing Cholera erations..... S. MacCuen Smith, M.D..... 448 Radical Cure of Stricture of the Nasal Infection...... 494 Scabies: Its Symptoms, Diagnosis, and Operations upon the Uterine Appendages Treatment. By J. Abbott Cantrell. The Surgical and Mechanical Treatment with a View to preserving the Funcof Granulations of the Conjunctiva ..... 486 tions of Menstruation and Ovulation... 494 On the Conduct of Rest Treatment. By Miners' Nystagmus and testing for Fire-Surgical Treatment of Gall-Stones...... 495 J. Madison Taylor, A.M., M.D...... 460 Damp-A Practical Point...... 486 Abdomino-Pelvic Fistulæ after Cœliot-The Indications for Subconjunctival Inomy and Laparotomy: Its Prevention jections of Corrosive Sublimate...... 488 and Treatment...... 495 Leading Articles. The Employment of the Skin of the Eel Hypodermic Method in the Treatment The Treatment of Chlorosis by Iron and (Lota Vulgaris) in Blepharoplastic Sur-gery...... 488 The Value of Vaso-Motor Dilators in Gussenbauer's Sacral Operation...... 498 Restoration of the Eyelid by Means of Conditions of Cardiac Failure..... 470 Three Successful Cases of Myxœdema... 498 Phlyctenular Kerato-Conjunctivitis and The Treatment of Constitutional Syphiits Treatment ...... 470 Painful Micturition in Women...... 489 lis by External Methods of Adminis-The Use of Organic Liquids extracted tration of Mercury ..... 499 Non-Perforating Peritoneal and Intesfrom Glands and other Organs ...... 472 tinal Lesions and their Treatment ...... 491 A New Antiseptic Mixture..... 500 Treatment after Nephrectomy...... 473 Experimental Contributions to the Question of Antiseptics in the Treatment of Reviews..... 500 Surgical Diseases of the Urinary Pas-Reports on Therapeutic Progress. The Treatment of Diarrhoea in Hot The Treatment of Graves's Disease ...... 468 Correspondence. A Contribution to the Study of Sym-Countries..... 401

Enchondroma of the Scapula ...... 492

### Original Communications.

pathetic Ophthalmia...... 468

ENTEROCLYSIS IN THE SUMMER DIAR-RHŒA OF CHILDREN, WITH A REPORT OF SEVENTY-EIGHT CASES, TO-GETHER WITH THE RESULTS OF LABORATORY INVES-TIGATIONS.

Being a Thesis to which was awarded the Prize offered by the Chair of Medicine in the Jefferson Medical College, May, 1893.

By R. E. Müller, B.Sc., M.D.

Assistant Physician in the Children's Dispensary, Jefferson Medical College Hospital.

#### EXPERIMENTS.

T has been generally believed that a pressure of nine pounds will cause rupture of the peritoneal coat of the intestines, and that the ileo-cæcal valve will prevent the entrance of

liquids from the colon into the small intestines. To determine this question independently I undertook a number of experiments, the results of which are hereby detailed:

Milwaukee Letter..... 503

Experiments 1, 2, 3, 4, and 5 were made on dogs. Four doses, of 20 grains each, of compound powder of jalap were administered at intervals of four hours, causing profuse, watery stools and severe vomiting. The object of administering jalap was to produce a violent gastro-enteritis, and thereby, if possible, to weaken the intestinal coats. In every case the post-mortem examination revealed a severe inflammation of the mucous membrane of the stomach, small intestine, the ascending and the transverse colon. With a reservoir containing two quarts of water, and suspended at an elevation of three, four, or eight feet, a flexible rubber catheter was connected, the

free extremity of which was introduced into the rectum.

Experiment 1.—Male pup; weight, 10½ pounds. The experiment proved unsuccessful, as the careless introduction of the catheter caused a small perforation of the gut near the sigmoid flexure, through which the liquid found its way into the abdominal cavity.

Experiment 2.—Full-grown dog; weight, 14 pounds; elevation of reservoir, four feet. The liquid readily passed the ileo-cæcal valve into the small intestine.

Experiment 3.—Full-grown dog; weight, 11 pounds; elevation of reservoir, eight feet. The powerful pressure caused considerable distention of the colon; only a small amount of water passed the ileo-cæcal valve, the greater part being forced back through the anal orifice. The ascending colon was then ligated at a point about three inches beyond the ileo-cæcal valve, and the fluid was again introduced from an elevation of eight feet. The anal tissues were at the same time firmly compressed around the catheter to prevent regurgitation of the injected fluid. The colon was not ruptured; after it had been completely filled the flow of water ceased.

Experiment 4.—Full-grown dog; weight, 13 pounds; elevation of reservoir, three feet. The liquid slowly passed the ileo-cæcal valve into the small intestine and into the stomach.

Experiment 5.—Full-grown dog; weight, 12 pounds. The ileum was ligated at a point about ten inches from the cæcum, and the water was forced into the bowel from an elevation of eight feet. The anal tissues were firmly compressed. No rupture of any of the intestinal coats followed.

Experiment 6.—Female child, three weeks old; dead of pneumonia; elevation of reservoir, three feet. The liquid refused to pass the ileo-cæcal valve. Upon examination the valve was found to be normal.

These experiments demonstrate that it is almost impossible to rupture an inflamed bowel, even if obstructed. Before rupture occurs the contraction of the sphincter muscle is overcome, and the water is expelled or escapes gradually through the ileo-cæcal valve into the small intestine and into the stomach, whence it may be expelled by vomiting. Experiment 6 demonstrates that, although the ileo-cæcal valve be normal, irrigation of the small intestine is not always possible. Experiments 1, 2, 3, 4, and 5 show that in some cases irrigation of the small intestine may be successful.

Method of Execution.—To insure perfect success with enteroclysis the procedure must

be practised intelligently and systematically. To determine accurately the quantity of fluid used in each case, a graduated glass bottle of a capacity of at least two pints is required. An O'Brien's rectal flexible rubber catheter ten inches long and one-quarter of an inch in diameter, with two openings on opposite sides close to its tip, is attached to the free extremity of an ordinary tube, four feet long, connected with the reservoir.

In pursuing this course the injection of air is avoided, and the rate of discharge of liquid may be regulated at will by simply compressing the rubber tube with the fingers or by means of a clamp. It is better to use a long catheter for irrigation of the bowel, so that, if desired, it may be introduced beyond the sigmoid flexure; in cases of catarrhal proctitis a shorter tube is preferable.

In practising the irrigation the child is placed on a bed, protected by a rubber cloth or a Kelly pad, and the catheter, lubricated with vaseline, is gently introduced into the The successful introduction of the anus. catheter is not always an easy matter. Often the sphincter muscle resents this process; in other cases it will not contract sufficiently to hold the catheter in position. The resistance of the sphincter may be overcome by placing a flannel blanket under the child, to prevent it from coming into contact with the cold surface of the rubber cloth, or by bathing the anus with warm water. The failure of the sphincter to contract may be compensated for by compressing with the thumb and index-finger the anal tissues around the catheter after its introduction.

As the rectum is not a straight tube, the catheter should be flexible; if a hard tube be used, the sensitive mucous membrane may readily be injured. For its first inch the catheter should be introduced in the direction of the umbilicus, and then towards the hollow of the sacrum; by semi-rotary movements it can be gradually insinuated into the lowest part of the sigmoid flexure. The most satisfactory results are obtained by holding the vessel containing the fluid about two feet above the patient, and after a small amount of the water has been allowed to trickle into the gut, to gradually raise the reservoir to the height of three feet. When the bowel is fully distended, slight additional pressure may be exerted by raising the receptacle a few inches higher still, which in most cases will be followed by the immediate and forcible expulsion of both catheter and fluid. The height of the column of water will represent the mechanical force

the mass of water which fills and distends the intestinal canal, the muscular layer is stimulated to contraction; therefore, the more gently and slowly the fluid is allowed to trickle into the bowel the less resistance, as a rule, is encountered from the gut and sphincter muscles. The temperature of the water should vary with the intensity of the fever and the resistance this offers to the antifebrile process. Water cooled by ice to a temperature of from 52° to 55° F. is used in cases presenting symptoms of mild pyrexia. When the temperature of the patient indicates hyperpyrexia. the temperature of the water is reduced to 43° F. The amount of water to be in jected into the gut may vary from one to two or even three pints. Three pints are rarely necessary, and quite as satisfactory results are obtained by using from one to two pints; in fact, while this quantity is used in the course of the entire irrigation, from ten to twelve ounces are as much as the bowel will in most cases retain before expulsion takes place. To produce a greater and more lasting reduction of temperature, an irrigation lasting from six to ten minutes did more good with a definite quantity of water than with the same amount of water, though at a temperature of from five to ten degrees lower, but lasting only four or five minutes. Of course every case possesses individual characteristics, and irrigation is used only so long as the symptoms seem to require it. Much depends on the relative capacity of each child. If it be weakly, it is not always a good plan to irrigate with water at a temperature of 43° F., however intense the fever may be. An irrigation with water at a temperature of from 60° to 65° F. will, in such a case, accomplish as much as one with water of a still lower degree, without exposing the already exhausted system to a powerful shock. In several cases in which the temperature taken in the rectum ranged between 104° and 105° F., and the temperature of the water entering the rectum was 45° F., the temperature of the fluid on leaving the rectum, after an irrigation lasting from six to eight minutes, was 59° F., showing an increase in temperature of 14° F. The temperature is taken immediately before and again about forty-five minutes after the operation. is necessary for a correct insight into the effects of the operation and for the successful conduct of the treatment. The introduction of the thermometer after the irrigation is attended with little difficulty, as the patient feels

by which the fluid is impelled into the intes-

tine under constant pressure. By reason of

comfortable and is less restless than before. It is absolutely useless to take the temperature directly after the operation, as it will indicate nothing of any clinical value. It is always normal or even subnormal in the rectum, while in the axilla it rises from  $\frac{2}{10}$ ° to 1° F., with a subsequent gradual fall.

The number of irrigations and the intervals between them will depend mainly on the gravity of the case; they may be given every four hours, or even at shorter intervals, during the height of the fever. Caution must, however, be exercised that the treatment be not overdone. While, as a rule, the effects of an irrigation persist for from three to six or seven hours, it is not always so, and particularly in the severer cases, in which the reduction of temperature may be of short duration. few isolated cases the reduction is considerable and seems to be sufficient, but rises at once after the operation. Examination of the temperature-charts of Cases 576 and 461 will show these to be instances of this kind. In these the irrigations were repeated every hour and a half or two hours until in both cases, after the fourth operation, a more marked and more lasting remission could be observed. As a rule, if the rectal temperature is found to be two degrees lower from three-quarters of an hour to an hour after the irrigation, the operation is not to be repeated for at least two hours. expiration of this time the temperature does not exceed, but still remains in the neighborhood of 102° F., the treatment with ice-water is discontinued, and irrigation with cold water at a temperature of from 65° to 70° F., or with a normal salt solution (six-tenths of one per cent.), is practised night and morning until the temperature becomes normal. It is a good plan to continue the saline irrigations at a temperature of from 80° to 85° F. in cases of infectious diarrhœa, even after the fever has disappeared, as I am convinced that a more speedy convalescence of the little patient is thereby brought about.

The first operation should always be personally superintended, as there is often great reluctance, if not decided opposition, on the part of the mother. After the irrigation the child is wrapped in a thin woollen blanket, laid upon a bed, and generally falls asleep.

I believe that the beneficial results obtained by irrigation of the intestines are due to the abstraction of heat by cold water in hyperpyrexia and to the stimulating effect of warm water in the algid state, but still more largely, whether warm or cold water or a normal saline solution be used, to ridding the bowel of decomposing and septic matters, which, becoming absorbed, give rise to high fever and nervous symptoms.

Irrigation of the stomach is undoubtedly of value in cleansing the viscus and placing it in a better condition to digest the food; it is preferably done before feeding. An apparatus similar to that employed in the practice of irrigation of the intestines can be used. The end of the catheter is placed on the back part of the child's tongue, when a swallowing motion will be noticed, and the tube may be passed into the stomach. This procedure, however, is not always advisable. Sometimes the stomach of the infant is in such an irritable condition that the introduction of the tube is followed by attempts at vomiting during, and continuous eructations after, the operation, which tend to increase the already marked exhaustion of the little sufferer.

Direct and Indirect Physiological Effects of Cold on the Living Organism.—Ludwig (v) teaches the following in regard to the direct and indirect effect of cold on the living organism: "Among the influences which are able to call forth the activity of the sensory nerves, cold and mechanical causes hold the first place." The intensity of the irrigation depends on the rapidity with which the change in temperature takes place, on the temperature of the body, and on the extent of surface exposed at the time to the change of temperature. "The greater the difference between the temperature of the body and that of the agent acting on it the more decided will be the effect produced." Enteroclysis with cold or iced water is, therefore, a capital stimulating remedy, and the reviving influence on the organism can clearly be determined. Aside from the abstraction of heat and the stimulation, a third effect may be ascribed to this treatment. Winternitz (w) describes the revulsive effect of the influence of cold on the cutaneous surface of the whole body as follows:

"That there is a revulsive effect on the mucous membrane of the intestines, as a result of the influence of cold, cannot be doubted. After the transitory contraction of the blood-vessels reaction sets in, the muscular coats of the arteries relax, and thus the blood-vessels of the intestines and of the immediate surrounding structure are considerably dilated and their capacity as a whole increased."

"Each systole of the heart throws a portion of blood into the arteries, which take it up with avidity, without increased tension, because their capacity being increased, they can carry more blood than before. In the same way the

relaxed veins can stow away more of the blood which passes into them. The dilated mesenteric vessels, acting like a sponge, absorb the blood from the inner vessels, relieve them of their contents, and lower their tension. As a result, the blood-pressure in other organs will be lowered, the amount of blood they contain will be diminished, the flow of blood will be retarded, the activity of the heart will be increased, the temperature will be reduced, and the nervous system will be quieted."

My experiences are in entire accord with these views. I believe that the high temperature and the nervous manifestations are due to the absorption of poisonous ptomaines and leucomaines, and that the beneficial results of irrigation undoubtedly depend largely on the removal of these poisonous materials.

Influence of Irrigation on the Temperature.— A reduction of temperature of greater or less degree is in all cases observed to follow irrigation of the bowel. The maximum reduction, as observed, is of course most marked in the rectum immediately after the withdrawal of the In a short time the temperature rises for some minutes: it then remains stationary for a little while, and again ascends more or less rapidly, rarely reaching the previous elevation. Cases 479, 533, and 448 will illustrate this fact. Owing to the contraction of the blood-vessels of the intestine and the surrounding parts during the injection of cold water, the temperature in the axilla rises from two-tenths of a degree to a degree, to remain stationary for a short time after the flow of water is interrupted; but it soon falls, in association with a corresponding or greater elevation of temperature in the rectum.

The duration of the effect of the irrigation is more considerable in mild cases and least in grave cases with high fever. If the temperature declines but little after the first or second irrigation and soon rises to near its former level, the case is likely to be a severe one (Cases 451, 534). If, on the contrary, the temperature rises slowly, the chance of a speedy recovery is more favorable, especially if there be also favorable changes in the pulse, respiration, and nervous system. The resistance, therefore, which the fever offers to its reduction will indicate the gravity or mildness of the case, and allow us to judge of the value of the treatment. A lasting diminution of the temperature is in most cases brought about by each irrigation, and even in those instances in which the first irrigation is not followed by a lasting reduction a further rise can surely be prevented.

It may thus be said that by means of enteroclysis high temperature may be reduced by small remissions, so that the intensity of the febrile process is gradually but surely diminished, while the heat-regulating apparatus of the body is permitted to carry on its function at more nearly the normal level. It might be supposed that these beneficial results are produced by diminishing heat production and increasing heat dissipation, but to my mind they are to be principally attributed to the removal of septic material from the intestines.

Brand (x) says, "It would seem not illogical that, if a method of treatment has the power to bring back the heat-regulating organs to their normal condition, it may have a similar influence on some of the other protoplasmic structures just as important to the maintenance of life as the respiratory centre, the nerves governing the heart and those regulating the flow of the blood and the nutritive fluids of the body."

Ziemssen (y) has observed the temperature of the stomach to fall 0.9° C., or 1.7° F., on the injection of cold water into the rectum, and says, "Since we are in a position to cause a reduction of temperature in such a distant organ by means of cold irrigation, how much more will we be able to influence as we desire the neighboring organs of the rectum and large intestine in their temperature and thereby in their process of nutrition?"

M. Thermes (z), in a paper presented to the Société Hydrologie, 1878, also demonstrates that the judicious application of cold to the epidermis and mucous membrane will increase the number of blood-corpuscles and improve their quality. Tepid irrigations with water at a temperature closely approaching that of the blood heat the large intestines for a shorter or longer duration, probably by diminishing heat dissipation and by heating the surrounding structures.

Influence of Irrigation on the Circulatory Organs.—Keating and Edwards (A), as a result of clinical studies of the pulse in childhood, state that the average pulse of the healthy infant between the first and second month is 137 per minute; from the third to the sixth month, 128; and from the sixth to the twelfth month, 120; that the pulse in children is likely to be very irregular, and that it is more rapid while the child is awake, particularly if standing. The latter assertion Goodhart (B) denies, stating that in several cases Newnham noted the pulse-rate to be three or four beats more frequent during sleep. That the pulse in the young child is often very irregular, whether awake or asleep, is not disputed; hence the results furnished by an examination of the pulse in young children cannot be considered of the same definite value as in the adult.

In summer diseases the pulse generally ranges between 120 and 180 beats per minute. Intestinal irrigation with cold or iced water will subdue this frequency even more promptly than it does the temperature. The pulse-rate is often diminished from ten to twenty beats a minute, and in mild cases a favorable lasting result is sometimes obtained after the first or second irrigation. An insufficient influence on the frequency of the pulse seems again to indicate a more or less dangerous condition of the child, and in such cases the amount of alcohol is to be increased, without, however, discontinuing or reducing the number of irrigations, as it becomes apparent that the heart, beginning to grow weaker, is induced to do fresh work by the irrigation with cold water, together with a liberal allowance of alcohol. Tripier and Bouveret (C) claim that cold water is a true heart-tonic; that it prevents the acceleration of the pulse and makes it stronger; and that it diminishes and removes the first sign of heart-weakness. Every irrigation is followed by a prompt stimulation of the arterial system. The marked and permanent diminution in the frequency of the pulse is soon accompanied by a favorable change in its quality. The more often the irrigation is repeated the more persistent will become the energy of the

Influence of Irrigation on the Digestive Organs.

—The effects of enteroclysis on the digestive organs are marked during the first twenty-four hours. Vomiting, one of the most distressing symptoms, ceases in most cases after the first or second irrigation.

The changes in the mucous membranes visible to the eye permit the assumption that a similar change is in progress in the mucous membrane of the gastro-intestinal tract, and that a tonic action is brought about in the circulation of these parts. At any rate, the catarrhal symptoms disappear; the diarrhœa diminishes from the outset, and often ceases after the third or fourth operation. tongue and the mouth, which were dry, red. and hot, assume their normal state. The abdomen becomes moist, even soft and relaxed. The intense thirst, such a characteristic symptom, soon moderates, and a general improvement is brought about in the mucous membrane of the whole gastro-intestinal tract. Roehring (D) has proved that irrigation of the intestines increases for a time the secretion of bile. Increased secretion of bile, however, always causes a more active peristaltic motion.

Influence of Irrigation on the Nervous System.—Nervous symptoms of a serious character, such as stupor or convulsions, are not uncommon in bad cases. Griesinger (E) says, "Of whatever character the disturbance of the brain and nervous system may be and of whatever intensity, one thing alone will restore the normal equilibrium and relieve the condition,—sound normal sleep." Sleep in most cases sets in shortly after each enteroclysis and continues until the next rise of temperature makes itself felt. This restoration of the disturbed functions of the nervous system cannot but influence the prognosis of the disease in a favorable way.

Convulsions also yield more readily to the cooling process than to any therapeutic measure, but should these still continue after the third or fourth irrigation, the prognosis must be considered unfavorable. Quite often, even after the first or second irrigation, the convulsions abate or entirely cease (Cases 436, 533). The restlessness, however, reappears as the immediate effects of the cooling process pass away. Improvement and even total disappearance of the gravest symptoms do not always coincide with the reduction of the temperature. fact seems to prove Tripier's (F) assertion that cold water has a direct action on the nervous system to a certain degree independently of the abstraction of heat.

(To be continued.)

CREOSOTE IN TUBERCULOSIS PUL-MONUM.

Read before the Association of American Physicians, May 30, 1893.

By J. T. WHITTAKER, M.D., CINCINNATI, OHIO, Professor of Theory and Practice of Medicine and Clinical Medicine, Medical College of Ohio.

In the presentation of a paper to one of our societies we are not allowed the liberty of even our immediate forefathers. We are compelled to entirely eliminate the "personal equation," whereby the matter becomes perhaps more exact, but often less interesting. This fact is illustrated in one of the earliest contributions "On the Medicinal Properties of Creosote," which the author, John Elliotson, M.D., F.R.S., President of the Society, read at the opening of the Society's apartments, February 24, 1835, quoting the remark of Lord Bacon, that physicians apply themselves too exclusively to general indications, neglecting

the peculiar properties of remedies in particular diseases. Bacon says, "they merely go on in their prescriptions, addendo, et demendo, et mutando . . . quid pro quo substituendo," and he advises that "some physicians of education and practical knowledge shall devote some time to the exhibition of medicines in particular diseases."

Elliotson says Bishop Berkeley killed creosote by overpraise, just as Pope killed Berkeley when he said,—

"Manners with candour are to Benson given, To Berkeley every virtue under heaven."

Elliotson tried creosote in phthisis and epilepsy, and discovered the virtue of it in obstinate vomiting. He says, "While I was trying creosote in phthisis and epilepsy, Asiatic cholera became epidemic in London. Two cases occurred at St. Thomas, and creosote was given with the effect of immediately arresting the vomiting." The author saw no benefit from creosote administered internally in the treatment of phthisis, but found it of great value when used by inhalation. Thus, "I am satisfied that it is no remedy for tubercles. Where, however, only a single ulcer, or but a small number exist in the lungs, and there is no disposition to further tubercular formation, it is very beneficial. A young gentleman with a large solitary cavity in his left lung has completely recovered, and not the slightest morbid condition is discoverable by the ear." He knew the case of a lady who steadily augmented her dose of creosote to 40 drops before it disagreed.

All this was in 1835, only three years after creosote was discovered.

Disregarding now the literature of tar, the vapors of which were recommended in phthisis, as long ago as 1817, by Sir A. Crichton, physician to the Empress of Russia, and by Morton, of Philadelphia, as early as 1834, as a treatment "with which nothing could compare," we come to creosote, the essential ingredient of tar.

Creosote,  $x\rho\ell\alpha\sigma$ , flesh, Attic  $x\rho\ell\omega\sigma$ , Doric  $x\rho\bar{\eta}\sigma$ , hence creasote, creosote, or cresote,  $\delta\omega\bar{\varepsilon}\epsilon\iota\nu$ , to save, was separated by Reichenbach, in 1832, from wood-tar, and received its name from the property of preserving meat from decomposition without rendering it unfit for nutrition. Two years later, Runge extracted carbolic acid from coal-tar. Gerhardt gave this product the name phenol. The substances were confounded until 1853, when Gorup-Besanez declared that the creosote extracted by Reichenbach from beechwood tar

was an entirely different body from carbolic acid, in that creosote consisted of a mixture of guaiacol and cresol, while carbolic acid is crystalline and contains but one atom of oxygen; hence it is not really an acid, but an alcohol, and should be known as phenyl-alco-Creosote is the cause of the conservation of meat in smoking. A piece of fresh meat allowed to remain half to one hour in creosote water takes the smell and taste of smoked flesh. and withstands decomposition absolutely. sects and fish perish at once in creosote water, and plants watered with it wither away. According to Miguet, a young and vigorous rosebush in full bloom thus treated perished in the course of eight days. A few drops of the same solution applied to a red rose deprived it both of color and life (Stillé).

The toxic effect of creosote is, however, much less than that of carbolic acid. In a case reported by Pereira, a fatal dose was 120 drops, diluted with double the quantity of water. According to Taylor, 90 drops well diluted with water may be taken safely. The experiments by Husemann and Ummethum showed that it required, by subcutaneous injection, five times as much creosote as carbolic acid to kill frogs, and more than twice as much to kill pigeons. In rabbits, one gramme constitutes a fatal dose of carbolic acid. This quantity of creosote produces in the rabbit no symptoms at all, and death occurs only after the exhibition of four grammes.

The virtue of creosote depends upon its purity, especially upon its freedom from carbolic acid and pyrogallol.

According to Vigier, creosote owes its effect not to any single chemically-defined substance, but to a mixture of cresol, especially to guaiacol; also to derivatives of pyrogallol, which last substance is toxic. Guaiacol, which is the active principle of creosote, according to Picot, Lepine, and others, is more readily tolerated than creosote, but it is seldom found pure in commerce. Impure creosote, that which contains carbolic acid, etc., irritates the mucous membrane of the stomach and intestines, and produces local inflammation. Some of the contradictory testimony regarding the remedy is thus explained.

The uncertainty of the drug in former, even in recent, use is illustrated in the statement by Oertel (*Handbuch der Allegemeine Therapie*, 1882) that creosote acts like carbolic acid, but as the composition of creosote is so uncertain, it is better substituted by carbolic acid.

Dagivait, indeed, maintains that failures are due to impurities. He published a communi-

cation on "Impure Creosote the Cause of Failure in the Treatment of Pulmonary Tuberculosis"

In a healthy man, therapeutic doses produce no action whatever on the circulation, nutrition, calorification. The proportion of urea, of phosphoric acid in the urine, remains the same. The uric acid only diminishes. Once absorbed in the body, creosote escapes chiefly by the lungs and the kidneys, and there is observed in cases of the absorption of toxic doses, polyuria, dysuria, brown discoloration of the urine, bronchial excitation with hyperæmia, and the impregnation of the breath with creosote. The taste is preserved in the mouth in certain cases, which seems to prove that creosote is eliminated also by the salivary glands.

Bouchard found that it required seventeen millimetre cubes of creosote per kilogramme to kill a rabbit. By subcutaneous injections of an oleaginous solution of creosote, it required a dose nineteen times as strong. One may, without danger, inject every day in a rabbit 25 millimetre cubes per kilogramme in an oleaginous solution. This daily dose, which is without danger to an animal, is equivalent to fifteen grammes to a man weighing sixty kilogrammes,—i.e., 3ss to one hundred and forty pounds. A non-fatal dose produces as a sole phenomenon in animals a retardation of respiration. The number falls from eighty to sixteen in the minute. Long and anxious pauses Bouchard had remarked upon this retardation of respiration in man.

Forty-five years had elapsed since the discovery of creosote. The drug was widely, almost wildly, used, and then forgotten. From this oblivion it was rescued in 1877 by Bouchard and Gimbert, the real pioneers in this therapy, who ascribed to it great virtue in the treatment of phthisis.

Sommerbrodt has just published a statistical essay of the use of creosote since 1887, in chronological order, showing the gradual development in creosote therapy. The most remarkable result is the increase in the daily dose, and the author confirms the statement originally expressed that the more creosote is tolerated during the day the better is its effect. While the daily dose for an adult in former years reached a maximum of ½ gramme, in later times the dose has been gradually increased to 4, even to 8, grammes per day (in children ½ to 1½ grammes), not only without injury, but with the best effect. Cough and expectoration disappear. The undesirable use of morphine is rendered superfluous. sweats cease, the appetite becomes sometimes

enormous, the body-weight gains. The local effects in the lungs disappear, or remain only as relics. Even in the grave, apparently hopeless cases remarkable, though of course only temporary, results are accomplished. the author saw formerly in small doses only essential improvement, latterly with large doses he has been able to accomplish cures, and that, too, not only in lung tuberculosis, but also in surgical tuberculosis and in scrofula. The increase in the consumption of the drug may be appreciated by the statement that in the Moabite Hospital the quantity used in 1877 was one kilogramme, fifty grammes; in 1888, 4.225 kilogrammes; in 1891, 11.7 kilogrammes; and in 1893, 18 kilogrammes,-i.e., about forty pounds.

On the other hand, Fürbringer declares that he has not given creosote in the last one or two years, because he had not obtained success enough to justify it. In half of the cases there was no influence either favorable or unfavorable; in one-fourth of the cases the influence was directly injurious. The remedy hurt the stomach. Patients lost appetite and became miserable. The rest experienced various subjective and objective effects, but when these apparent results of creosote were compared with hygienic or dietetic procedures without creosote, there was no difference to record.

May these diametrically opposite opinions of good clinicians be reconciled in the study of the action of the drug?

Guttmann found that in solution of 1 to 4000 creosote exercised a marked inhibitory faculty on the growth of tubercle bacilli, and in solution of 1 to 2000 actually destroyed it. Guttmann's experiments were made in 1887 out of the body, but deductions could not be drawn thence in the body, because the concentrations were too great. In order to secure a proportion of 1 to 4000,—a concentration which hinders the growth of tubercle bacilli,—more than one gramme of creosote would have to circulate in the blood.

Cornet showed that large quantities of creosote in the stomach did not prevent the development of the tubercle bacillus in guinea-pigs. In the proportion of 1 to 100 it fails after twenty hours' exposure to destroy tubercle bacilli in the sputum. A saturated aqueous solution does not destroy the tubercle bacillus in cultures in twelve hours. (Sternberg.)

In Trudeau's experiments, the rabbit inoculated with tuberculosis, and treated with creosote subcutaneously, presented the same lesions as control animals not so treated.

Bouchard deduced from his experiments that

3.5 grammes (about one drachm) of creosote would suffice to destroy bacilli in the middle of the body of a man weighing sixty kilogrammes (one hundred and forty pounds), but Burlureaux injected into tuberculous patients as much as forty grammes of creosote a day. Now, according to Bouchard, all these bacilli ought to have been killed, and the patient ought to have recovered; but, says Peter, these results did not occur.

Albu's experiments show that tuberculous sputum taken from bodies saturated with creosote maintains its virulence. He injected such sputum in the anterior chamber of the eyes of rabbits. The course of the disease was perfectly typical. By the nineteenth day tubercle bacilli formed their first colonies visible under the lens. Subsequent changes ensued in course. Only one animal showed miliary tuberculosis.

In a second series of experiments such sputum was injected into guinea-pigs, intraperitoneal. The peritoneum showed virulent material in six weeks. Hence there is no specific influence of the drug.

The clinical proof of the effect of the remedy in tuberculosis is the influence on the fever. Creosote has no real influence on the fever. The writer has tested this fact in every way. Though the patient be saturated with the drug by every avenue,—by the stomach, by the lungs, by the bowels, by the skin, by all these methods at once,-creosote does not control the fever. Thus, there is no specific influence and no real that is, no radical or no direct—cure. But if creosote can cure indirectly, or if it will only arrest the disease, or if it will only relieve complications, it will hold its place until something radical is found. Sommerbrodt says that though a scientific explanation is still lacking, he believes that creosote alters the tissue of the cells and the chemical condition of the juices of the body, so that they no longer furnish a suitable culture soil for the tubercle bacilli, the colonies of which will not grow in it.

Ludwig maintains that creosote destroys the toxine of the tubercle bacillus. This is a fine theory, but undemonstrable at present. After ten injections, catarrhal cases at the apices will show no bacilli. The caseous will soon assume the mucoid form, which seems to exercise a toxic effect on the microbe.

According to Peter, injections of guaiacol and creosote act by substituting a fugitive and curable hyperæmia for a tuberculosis hyperæmia. Under the drug, cough and expectoration diminish, fever and night-sweats cease, appetite returns, and the patient gains weight

and strength. The benefit is due to its elimination by the lungs. It excites a simple and transitory inflammation, which substitutes a specific catarrh.

Dujardin-Beaumetz, indeed, declares that creosote in appreciable dose congests the bronchial mucous membrane and promotes hemorrhage, while Guiter claims that creosote acts as an irritant which favors cicatricial sclerosis. Finally, Peter believes that creosote is more useful in protecting healthy tissues than in curing those which are already invaded. All these views are theories, and though they are advanced by clinicians, are undemonstrable by clinical proof. Creosote acts on the stomach. This fact has been observed by Walche. Hopmann, and Klemper. It excites the appetite and lessens the distress of indigestion. In fact, this action was the first observed. Most patients improve decidedly for a time under the immediate change of nutrition. And this action is well understood; for, according to Brunton, while I part of chlorine in 8540 parts of a saturated solution will arrest the digestive action of ptyalin upon starch paste, and corrosive sublimate is so enormously destructive as to arrest its action even in 1 part to 51,000, creosote has no action on ptyalin, even in saturated solution, and has but a very feeble action upon pepsin. Thus, creosote merits its name.

It is impossible to proceed further in the study of the action of a remedy in tuberculosis without more definite knowledge of the nature of tuberculosis, and what it is that is to be accomplished. In this regard there is new, or at least more definite, knowledge. It is known now that the whole character of consumption—i.e. tuberculosis pulmonum-was not determined with the discovery of the bacillus tuberculosis. This is the key-stone, it is true, but there are other stones really equally important which go to make up the structure. It is now known that tuberculosis of the lungs, at least, is not a pure process. In test-tubes a culture, to be kept pure, must be secluded from the outside air as a sine qua non. This seclusion does not obtain in the lungs. On the contrary, the tubes containing the cultures—i.e., the bronchial tubes—are all open to the air, and are subject to constant contamination. So that human differs essentially from laboratory tuberculosis.

The contaminating bacteria of sputum have been recently investigated by Evans and Babes. Maragliano called attention to the possibility of their clinical signification, as did also Czaplewski, Ziegler, and Thorner. Long ago, Koch, in his work, and after him Gaffky, encountered the tetragonus as an occasional asso-

ciate of the tubercle bacillus, and spoke of its pathogenic properties.

Cornet, on "Mixed Infection," says it is well known to every one who has experimented with tuberculous sputum in animals, that many of the inoculated animals, especially rabbits, often perish in a few days from septic processes. For years, in his experiments, he avoided the sputum of phthisis florida and selected rather that of chronic cases, because experience taught him that such sputum rarely causes death by accidental disease. case described with acute exacerbation, there was found in the sputum, besides the tubercle bacillus, partly isolated and partly abundant diplo- and streptococci. Cultivation on agar gave almost a pure culture of streptococcus colonies. On post-mortem examination, microscopic sections showed, especially in the walls of the cavities and caseous parts, streptococci and monococci thickly sown. In agar developed innumerable streptococcus colonies like those found in sputum, and besides, but in less number, perhaps in the relation of one to twenty, the staphylococcus and pyogenes The streptococci grew in bouillon in firm masses and long chains, without making the fluid opaque,—a property, according to Von Lingelsheim, peculiar to pathogenic streptococci. They resemble in form and growth the streptococcus described by Curt as streptococcus agglomeratus. A mouse inoculated died in three days. The same streptococci were obtained from the blood of the heart, liver, and lungs in pure culture. A rabbit and a guineapig injected died, both in twelve days. Their organs were filled with streptococci.

Of the twenty cases investigated post mortem, and, so far as possible, *intra vitam*, there occurred twelve times such a dominating presence of streptococci that its work in the production of symptoms could not be questioned.

Petruschky confirms this fact. He found the streptococcus dominant in the great majority of cases studied. In eight of fourteen cases streptococci were found in the blood and juices of all the organs, whereby the significance of streptococcus infection is sufficiently shown. Pasquale also demonstrated streptococci in various tuberculous processes from the dead body. Therefore the expression "mixed infection" is not exactly correct, because it is not a case of simultaneous invasion. It is rather a secondary invasion of streptococci,—that is, it is properly a wound infection, and should be characterized as a "secondary infection." The inundation of the whole body with streptococci induces septicæmia. Hectic fever is distinguished by its

morning remissions and by its more or less sudden evening elevation. It is the fever of erysipelas, acute suppurative processes, puerperal fever, produced by pyogenic cocci, in the great majority of cases by the streptococcus. Koch calls this seesaw record the "streptococcus curver."

Can it be that creosote is destructive to these associated micro-organisms?

Upon this subject there is less definite knowledge.

Marfan declares that creosote has an action more energetic on the micro-organisms of secondary infection than on the bacillus itself. From this point of view it is, he says, "the most puissant of the balsams." Under its influence the cough diminishes, the expectoration and the râles become less abundant.

Sternberg found creosote fatal to micrococci in the proportion of 1 to 200.

Creosote was found by Werneke to destroy yeast in a dilution of 1 part to 500 of water, and by Bucholtz to kill ordinary bacteria in a dilution of 1 part to 1000 of water. This difference enables us to arrest fermentation in the stomach depending upon the presence of low organisms, while the digestive action of pepsin is not, or is only very slightly, disturbed (Brunton).

It is not likely that creosote neutralizes or destroys the streptococcus itself, because it shows no real effect upon the fever; but it certainly does inhibit the growth, or actually destroy, some of the organisms which induce fermentation in the stomach and intestine, without interfering with the actual processes of digestion, and this is the actual knowledge in hand at the present time regarding the action of the drug. Thus, creosote contributes to the cure of consumption, as does arsenic, hydrochloric acid, benzoate of soda, etc., through the avenue of nutrition.

In proof of the fact that the remedy acts only symptomatically, Albu cites an instructive case. A fifty-three-year-old laborer was received on the 11th of November. The first time he was treated with tuberculin, the second time on the expectant plan, the third time with creosote. Each time he regained the ten or twelve pounds which he had lost outside the hospital. This influence is to be ascribed only to the improved hygiene of the hospital.

Creosote is best given in gelatin capsules, o. r creosote with cod-liver oil. Pure creosote is cheaper. Sommerbrodt uses the preparation of Hartmann and Hauers, of Hanover. It may be given in a mixture of two parts of tincture of gentian in milk or wine. It should never

be taken on an empty stomach; best immediately after the three chief meals. It never hurts the stomach. It increases menstruation, consequently it should be checked during that period. It may be continued for years, and must be continued long after apparent cure. It is of course much assisted by climate, altitude, lung gymnastics, and good nourishment, but it does good even under the most unfavorable surroundings.

Vopelius declares that the more creosote is tolerated the better is the effect. He gave it in doses up to the point of tolerance, and found the improvement in correspondence. The appetite increased, and with it the weight. He gives it uniformly, beginning with a daily dose of 2 grammes, and increasing it up to 4, 5, 6, and 8 grammes a day. He gives it altogether with tincture of gentian in equal parts, with great abundance of milk as an emulsion. In shaking it about with milk, it becomes so finely subdivided that it no longer burns or irritates the mucous membranes. On the contrary, it rather stimulates the stomach to secretion.

The remedy has been administered by the stomach, by the rectum, by inhalation, and by the skin. In the rectum it has been given systematically by Revillet according to the following formula:

Water, 200 grammes; Creosote, pure, 2 to 4 grammes; Oil of sweet almond, 25 grammes; Yellow of egg, I.

The creosote is first dissolved in the oil and subsequently emulsified with the yellow of egg. This produces a liquid homogeneous, of the appearance of milk, and of a yellow color. The emulsion may be made still finer by the addition of some gum. The oil of sweet almond is preferred, because it does not produce colic, and because it contains besides matters which act as an adjuvant in the alimentation. The injection is taken preferably in the evening, as it is best retained at night. After injection, the signs of absorption show themselves rapidly. The patient instantly experiences the taste of creosote in the mouth, and the urine may assume a greenish-black color.

Creosote was injected through the thorax walls into the apices of the lungs by Lepine and Truc, of Lyons, and Gougenheim, of Paris, without any particular result.

The first idea of subcutaneous injection was entertained by Bouchard in 1875. Du Castel, in 1882, injected a peptonized creosote subcutaneously, but the introduction of the treatment is really due to Gimbert in 1886. He

was soon followed by Burloureaux. Gimbert injected a solution of creosote, in 1 to 14 grammes of the oil of sweet almond, drop by drop, stopping occasionally to avoid pain. Gimbert injected only 15 to 22 grammes of the creosotized oil,—that is to say, 1 to 1.5 of creosote. Burloureaux injected on an average 50 grammes,—i. e., over an ounce and a half a day,—and he even passed this dose, and made daily injections of 100, 180, 200, and even 220 grammes, in order to saturate the organism. The remedy is really harmless.

According to Burloureaux, who treated four hundred patients in this way, where tolerance ceases the prognosis is sombre and the patients are lost. If the patient perceives the taste of creosote a long time, if his urine becomes black, if he has vertigo, torpor, and sweats, recovery is despaired of. Sweating frequently occurs at the beginning of treatment, sometimes immediately in consequence of the injection. It is occasionally profuse, and may last seven or eight It is rare that it occurs alone; more often it is accompanied by fever, sometimes by chill, with headache and coldness. tremities may become icy cold. It is the picture of the algid form of pernicious fever. It does not last longer than three-quarters of an hour, and is followed by a state of bien être. The dose in these cases is excessive and should be reduced.

Frey declares that the drug is not so effective when administered by the mouth or the rectum as by the skin, absorption from which is very The taste is perceived in a few minutes after administration, and the odor is noticed in the breath. Injections are almost painless. Large quantities, however, produce thickening of the skin and prevent absorption. Frey begins with olive oil, sterilized, 15 grains; creosote, 1 grain; injects at first 3 grammes, later up to 10, three times a day, and continues two or three months, after which he uses a solution of 1 in 9. The injection should be entered slowly, in the time of a minute. The most preferable sites are the back, the inter-scapular region, or the thorax.

The best results are reported in scrofula and local tuberculosis,—that is, in precisely the cases where other therapy is most efficacious. This is a typical case. A patient who had been treated surgically for tuberculosis of the manubrium sterni and the internal extremity of both clavicles was put under the creosote treatment for a voluminous suppurating adenitis of the neck. In twenty-five days he received 1800 grammes of creosotized oil by the skin and 1000 grammes by the rectum. He increased in

weight seven pounds, suppuration disappeared, the adentitis receded, and the patient recovered. Another patient absorbed by the skin ten pounds of creosotized oil and by the bowel over two pounds in five months, and was cured of tuberculosis of the testicle.

In estimating the value of a remedy in tuberculosis pulmonum, we must remember how deceptive is the prognosis of the disease. there was the Baron Cloquet, affected with tuberculosis of the lungs at thirty-two years, and given six months to live, -not more. -after a consultation with Andral, Chomel, and Louis. Nevertheless he lived more than fifty years afterwards, and attended the funeral of all three It must be remembered of his prognosticators. that he lived under exceptional conditions. A spiritual egotist, he passed seven to eight months of the year in the Midi, on a splendid property which he possessed, with abundant nourishment, but delicate, that his stomach was able to digest easily. En outre, he never had the least fever (Peter).

Considered only from a clinical stand-point, creosote holds its place. It is an easy routine practice, and it is really, as shown, perfectly harmless in any dose. In my wards at the hospital all the tuberculous patients are put upon creosote immediately upon entry. begin with 5 drops of a mixture of creosote and tincture of nux vomica, or, where strychnine in large dose is contraindicated, tincture of gentian, in a teaspoonful of whiskey and a tablespoonful of water three times a day after meals; increase the dose a drop daily to ten, whereupon additional doses are given at 10 A.M., 4 P.M., and at bedtime as before. The body shows signs of saturation at 60 drops per day. Six cases were treated also hypodermically with the same dose, but without any appreciable advantage over the internal treatment alone. Four bad cases with marked hectic and forty lighter cases without hectic were treated, in addition, to inhalations in the pneumatic cabinet. and this or a similar method has been tried thoroughly in France, but in my cases, aside from the psychical effect, with no additional benefit.

All our cases in early and even in late non-febrile periods are, and have always been, regularly treated with tuberculin, which remains the only radical redress in pure tuberculosis, but which has no, or, by increase of hyperæmia, only a bad, effect upon the streptococcus infection.

#### CONCLUSIONS.

- 1. Creosote, when pure, is harmless.
- 2. It has no direct action upon the tubercle bacillus.

- 3. Tuberculosis pulmonum is chiefly a secondary infection by a streptococcus.
- 4. Creosote has no direct action upon this streptococcus; hence none whatever upon hectic fever.
- 5. It destroys lower organisms, especially those which produce fermentation, without affecting the process of digestion.

Hence, 6, the virtue of creosote, which is undeniable in most cases, is chiefly, but not wholly, upon nutrition.

## THE THERAPEUTICS OF CROUPOUS PNEUMONIA.

A Paper read before the Section on Diseases of Children, American Medical Association, June, 1893.

By J. A. LARRABEE, M.D.,

Professor of Obstetrics and Diseases of Children in the Hospital

College of Medicine, Louisville, Ky.

IN an attempt to present to you for discussion the subject which by your too partial choice has been assigned to me, I shall endeavor to keep as nearly as possible within its limits, and, with a due regard for the value of your time, I shall be as concise as possible.

It will, of course, be understood that the pneumonia known as catarrhal or bronchial, which prevails to so much greater extent in infancy and childhood, but differs so widely in both etiology and treatment, shall form no part of this discussion beyond mention. attempt to draw an age limit around croupous pneumonia by many of the older writers has been responsible for many failures in diagnosis. While few physicians at the present time fail to diagnosticate croupous pneumonia in the adult at some time during its progress, I must record my conviction, based upon experience, that many infants go to their graves annually from croupous pneumonia, with death-certificates signed "worms," "teething," and convulsions, and that quite as many aged persons escape diagnosis and are marked "senile debility." So much, then, for former teaching that croupous pneumonia is a disease of vigorous adult life.

In the discussion of the therapeutics of croupous pneumonia I recognize the importance of tabulating only those means which through a long period of time have proved valuable in the hands of the writer. The value of papers of this kind is in direct proportion to the truthfulness of the statement therein contained and to the careful clinical observation and experience of the author.

In treatises designed for text-books it is quite proper that all the known therapeutics, both practical and speculative, should be compiled, the endorsement of which is not made by the author, and little of which has been the result of his experience. I shall, therefore, make no attempt to enumerate the so-called remedies for this disease, however much extolled by others, nor shall I criticise those which, in the experience of others, have been valued.

I recognize various therapeutic roads leading to the same desired terminus, and I care as little what means may be employed by others equally skilled as I would to know with what tools a carpenter has completed my house, if he has completed it according to the plans and specifications.

Regarding pneumonia crouposa as an acute, infectious disease, running a definite and limited course, with a pronounced tendency to recovery by natural processes alone, I might be expected to say very little concerning its therapeutics.

Notwithstanding the fact that medicines are powerless to cut short the disease, and the conviction expressed that very many will recover without any medication, few physicians possess a clientele of sufficient intelligence to risk a trial.

For this reason, as well as to favor the course of nature in repair, I devised the following prescription some twenty years ago, since which time I have made it the sole treatment from the beginning to the close of the attack.

Moreover, it has been given as a part of my instruction to medical classes for nineteen years, and it is safe to say that at least a thousand practitioners have made it their chief reliance and have so expressed themselves to me by letter or person.

The indications—therapeutic—which are met by their combination are,—

- 1. Satisfaction on the part of friends that something is being done for the patient.
- 2. The satisfaction on the part of the practitioner that he is not doing harm to his patient.
  - 3. The promotion of diuresis.
- 4. The promotion of diaphoresis and increased elimination of carbonic acid with reduction of temperature.
- 5. Increased alkalinity, as shown by the urine, and a lessening of fibrin in the blood, promoting free mucous secretion and lessening the tendency to coagulation of blood.
- 6. Gentle but diffused stimulation of the nerve-centres, favoring sleep and preventing spasm.

R. Spts. ether. nitrosi,
Potassæ acet., aa ziss;
Spts. Mindereri,
Aquæ camphoræ, aa ziii.
To be left with slightly-acid reaction, as shown by litmus.
M.
Adult's dose, teaspoonful.
Child's dose, teaspoonful every two hours.

To this may be added tr. aconite or veratrum if needed, and in convalescence tr. ferri chloridi. Such additions always to be made as extra doses and not as part of the prescription.

Cardiac Stimulation.—Death approaches the sufferer from croupous pneumonia always through the heart. For this reason it is of the greatest importance to watch this organ from the inception to the close of the disease. With the trained finger upon the pulse and the educated ear over the præcordia, we catch the first signal To be forewarned is to be foreof danger. armed. Nothing is more essential to the cardiac therapeutics than a knowledge of the mechanism of heart-failure in pneumonia. Pari passu with the consolidation of lung, and in direct proportion to its extent, we have a mechanical obstruction to the transfer of blood from the right to the left heart, and added thereto the addition of carbonic acid anæsthesia.

This occurs at a time when ptomaines from the vegetable diplococcus are in the circulation and before the antipneumotoxin has been formed in the albumin of the blood. blood is coming into the right auricle than can be forced through the lung by the ventricular The right ventricle becomes so distended that the apex-beat is completely removed from its original site between the fifth and sixth ribs, and the ear placed over the heart detects a heavy, dull sound, while percussion reveals an increased area of dulness. In this condition the indications for improvement in the circulation become extreme and pressing. How shall this be best accomplished? Is it philosophical to attempt relief by a vis a tergo, or is it more rational to attempt a vis a frontis?

Are these the indications for the employment of digitalis? It may be a good plan to goad the tired ox that has fallen in the furrow if you want a little more work, but you will kill the ox. It may be good therapeutics to stimulate a diseased kidney if you want a little more urine, but you will have a little less patient. It may be good practice to give digitalis to a fagged-out heart in the stage of hepatization of croupous pneumonia, but I doubt it.

Digitalis stimulates a weak heart by contracting the arteries and the arterioles, throwing the blood back upon the heart itself, and where there is no pulmonary obstruction the action is prompt and efficient, as in valvular patulencies, etc.; but the very condition which is killing the patient in pneumonia would be rendered still more dangerous by such an agent. Our fathers did eat manna in the wilderness, and they are dead; but is it strange that vene-section should occur to the mind as a possible solution of the question?

Experiments in vivisection have demonstrated that a heart brought to a stand-still in such diastole may be revived by aspirating the right ventricle. It has been ascertained that even ligation of the lower extremities just sufficient to prevent the return of venous blood is followed by immediate relief of the heart. the same manner is the explanation of the sense of relief felt by the patient upon the application of dry cups and hot flaxseed poultice to the chest-walls. Pediluvia would also prove of service were it not for the ever-present danger of assuming the erect position. Notwithstanding it comes to us as a voice from the past, there is to-day much truth in the statement that "bloodletting is good in pneumonia." Bleeding and tartar emetic marked the heroic treatment of the sturdy yeomen of the early part of the nineteenth century, and yet we find from statistics that the mortality from 1822 to 1832 was ten per cent., while from 1880 to 1890 it was eighteen per cent. Without attempting to revive a therapeutic measure so long abandoned and so universally condemned, it must be admitted that those old-time doctors struck some underlying principle in therapeutics which we, with all modern accomplishments, have failed to recognize. That principle was relief of the overburdened heart. I propose, therefore, to demonstrate how this same desirable end may be obtained without jeopardizing the life of the patient and without inflicting upon him a prolonged and tedious convalescence.

- 1. By Agents which determine the Blood to the Skin.—This may be accomplished by the warm pack, which, applied at a temperature of 98½° F., and protected by light woollens, envelops the body in an atmosphere of steam. By this means the peripheral nerves are soothed, and almost invariably this procedure is followed by quiet sleep.
- 2. By Belladonna.—This time-honored and faithful servant of materia medica is too often lost sight of in practical therapeutics.

It has a place in all hyperpyrexias accompanied by paleness of the skin and in low stages of fever. It is particularly adapted to the condition under consideration, being an indirect stimulant to the heart, diminishing the blood-pressure by dilatation of the capillaries. It is also a stimulant to the respiratory centres of the brain, thereby inducing a more perfect aeration of the blood. The comparative harmlessness of this remedy in infancy and early childhood enables us to push it quite up to its toxical effect. It has done me yeoman's service in many an apparently hopeless case of threatened cardiac failure in pneumonia.

3. Nitro-Glycerin and the Nitrites.—These may be expected to rescue a heart after the manner of aspiration, taking off the pressure and flushing the skin even when brought to a standstill in the diastole of a full right ventricle. Aconite and veratrum viride certainly have a place in the treatment of pneumonia. The former being a sedative from the start, is too dangerous for administration by continued dosing; the latter is safer than digitalis. Fothergill's statement that "digitalis is both spur and oats to a heart" is pre-eminently true, and especially so in low forms of fever where the adynamia is due to long-continued hyperpyrexia.

I have attempted to show that the mechanism of cardiac failure in pneumonia has its foundation in an entirely different pathology. I have been led to these conclusions by clinical observations and not by theory. Finding that in this disease alone I failed to obtain the usual slowing and filling of the pulse in the radial artery, I began to investigate the cause of the failure of this grand old drug, so generally serviceable in crippled hearts.

Alcohol will prove a far better cardiac stimulant in pneumonia, by reason of its power to dilate the capillaries, thereby retaining more blood in the skin, while at the same time it may have some value as a respiratory stimulant.

Applications to the Chest.—The feeling that something may be accomplished, at least for the comfort of the patient suffering with pneumonia, by local applications to the thorax is universally believed by the laity. No doubt this idea has its origin in individual experience in many painful diseases. Shall they be cold or hot, moist or dry?

Heat is a stimulant and cold is a sedative. Heat relieves pain under any and all circumstances. Heat, locally applied, is a powerful stimulant to the heart and, by its action upon the vaso-motor nerves, lessens active hyperæmia of the brain. Physiological experiments made upon the heart of the frog show that pulsation may be restored, even after a complete cessation, by the application to this organ

of a piece of cotton wrung out of very hot water, but it is again arrested by the application of cold. I prefer warm to cold applications, although some authorities, particularly the Germans, speak favorably of cold, and even icepacks, in the treatment of pneumonia. The choice is between poultices and cotton batting protected by oiled silk.

Those of us who have experienced the relief of a congestive headache by a warm mustard foot-bath are best prepared to answer this question. Is it probable that the same relief would follow putting the feet in cotton batting instead of hot water?

Poultices are rarely properly made and seldom properly applied. Moreover, they are at best a very clumsy application, and, by adding weight to the chest-walls, embarrass still further the labored respiration. A towel wrung out of very warm water, wrapped once or twice around the chest and neatly covered by oiled silk, is a far more elegant and comfortable application. By this means the entire thorax is surrounded with an atmosphere of equal warmth and moisture, the superficial vessels are dilated, pain is relieved, and repair hastened. Stimulating embrocations are also of benefit and are useful in proportion to the chronicity of the case. The following is a favorite of mine:

> R Ol. succini rectificati, 3ss; Ol. caryophilii, mxx; Liniment. saponis, 3iss. M.

Expectorants.—Cough is a constant accompaniment of pneumonia; at first dry, frequent, and distressing. It soon succumbs to consolidation of the lungs, and returns with commencing resolution. This return is hailed with pleasure by the physician and with unnecessary alarm by the laity. Perhaps it is the latter observation which has led to the employment of expectorant mixtures most heterogeneous in composition and therapeutically incompatible in application. mixtures generally contain the entire list of so-called expectorants in the materia medica. Ipecac and squills to loosen, senega and ammonia to stimulate, wild cherry and other tannates to check secretions, alkalies to lessen viscidity of mucus, and opium to benumb sensibility.

Some of these prescriptions are a pharmaceutical curiosity. Yet one meets with them with such frequency in consultation practice that it would appear that reform in this direction is making slow progress. Such mixtures do little more than destroy the appetite and disgust the patient. Water, given in abun-

dance and at short intervals, is the best and only expectorant required. In cases of children about the time of crisis of pneumonia, with marked restlessness, cold extremities, and pinched features, I have seen great good result from tincture of assafcetida with whiskey toddy. As a protection to the chest during convalescence, a neatly-fitting vest made of one layer of carded wool or absorbent cotton, quilted and covered by oiled silk, should be worn upon the chest.

Purgatives.—It is probably the observation of others besides myself that purgatives administered during the stage of hepatization of a lung are bad. I have so often been called to cases made worse by the officiousness of some grandam, whose desire to purge amounted almost to insanity, that I am able to detect such interference by the collapse that has followed. I can give no explanation other than that purgatives add to the general depression at a time when the child is poorly able to withstand it. If the bowels need attention they should be moved by simple enemata.

Temperature.—The enthusiasm for the treatment of high temperatures, so popular a few years ago, has in a large measure subsided, and it may now be said that thermometric observations are less liable to plunge us into therapeutic errors than formerly. I have never participated in this "Don Quixotic" fight of temperature to the extent of allowing it to control my therapeutics, but have been content to treat hyperpyrexia alone and always in relation to other existing symptoms. In catarrhal pneumonia I am guided altogether by the respiration-rate, and in croupous pneumonia by the pulse-rate, as compared with temperature. It is exceedingly rare that I find a hyperpyrexia which does not yield to the warm bath or the warm pack, which I greatly prefer, and to the "tubing coils" known as my invention.

Some danger always attends upon the patient suddenly assuming an upright position in pneumonia, on account of the sudden strain placed upon the heart. I have more than once seen an immediately fatal result following such a procedure. Hence the preference of the pack to the bath. As I grow older in the profession and more experienced in practice I am less courageous in the use of heroic measures. I must confess to a timidity in the use of the so-called antipyretics known as the coal-tar derivatives, so highly praised by many excellent physicians. Reduction of temperature, however desirable, ought not to be purchased at the expense of deoxidation of the blood in pneumonia.

Cerebral Symptoms.—Previous to the investigations of Sternberg and Fraenkel, and the discovery of the bacillus diplococcus or pneumococcus of Friedländer, cerebral pneumonia admitted of no rational explanation. Various theories, in themselves ingenious, were made to account for the intense cephalalgia in adults, and for the initiatory convulsions of croupous pneumonia in infancy and childhood,—e.g., it was at one time thought that cerebral manifestations were more frequently associated with apex consolidation, and I myself, from observation, was inclined to corroborate this statement. Professor J. Lewis Smith, recording his own valuable experience during an epidemic of cerebro-spinal meningitis in 1872 in New York City, makes special mention of the great increase in the number of cases of croupous pneumonia prevailing at the time. He evidently recognizes a pneumonic form of cerebro-spinal fever. I have many times witnessed the recession of typical cerebro-spinal symptoms pari passu with the development of consolidation of the lung. In infancy these cerebral symptoms, marked by convulsions and vomiting, are so common an accompaniment of croupous pneumonia that one is never warranted in pronouncing upon meningitis without a careful examination of the chest. I am convinced that nothing but clinical experience will prevent the young practitioner from making this serious error, so completely do the brain-symptoms overshadow those of the pneumonia. In etiology, however, they do not differ from the symptoms produced by the alkaloidal products of micro-organisms (toxalbumins) in other diseases circulating in the blood,—e.g., scarlatina, small-pox, measles, and typhoid fever. So soon as the characteristic lesion of these diseases becomes established, these so-called brain-symptoms subside as rapidly as they came. this etiology it is scarcely possible that one will be found administering drastic cathartics or applying leeches to the scalp. Bromides and chloral are also of doubtful propriety. The warm bath, the warm wet-pack to the chest, and tubing-cap to the head, are almost -certainly followed by relief, quiet sleep, and by reduction of temperature, which is also a factor in disturbances of the nerve-centres by no means to be lost sight of in our therapeutics.

Crisis.—So long ago as 1880, in my lectures, I stated that the sudden and remarkable change which occurs usually from the fifth to the seventh day, and which is known as crisis, must have some other explanation than the subsidence of inflammation; auscultation and percussion so

frequently revealed no improvement which could reasonably account for such a change. For days after convalescence was established the local lesion could be readily demonstrated.

The study of the micrococcus pneumoniæ crouposæ and its product, pneumotoxin, has led to the discovery of a so-called antipneumotoxin, supposed by the celebrated German scientists Klemperer and brother to be antidotal to the former. The opening of this window of truth certainly throws a flood of light into this dark Should the fond expectations of these earnest investigators prove true, your patience will not be burdened in future by lengthy papers upon the therapeutics of pneumonia. will be made to cure the sick, and the physician, armed with his hypodermic syringe, will act as a mediator between the two. Unfortunately, however, for all these beautiful theories which, comet-like, dart across the medical sky, dazzling our vision, they are soon lost below the horizon, leaving us "to darkle in the trackless void."

In diseases which secure an immunity against a subsequent attack we have a right to expect much from inoculation. Pneumonia, so far from securing exemption from future attacks, predisposes to them, and this has been the observation of physicians from time immemorial the world over. I have in my practice a patient who has had croupous pneumonia seven times in six years, and whose life has been in jeopardy several times.

THE CLASS OF CASES IN WHICH WE MAY EXPECT GOOD RESULTS FROM EXCISION OF THE MEMBRANA TYMPANI AND OSSICLES.

By S. MACCUEN SMITH, M.D.,

Lecturer on Otology and Chief of Aural Clinic in Jefferson Medical
College of Philadelphia; Surgeon in Charge of the Ear,
Throat, and Nose Department of the Germantown
Hospital, Philadelphia, etc.

THE history of excision of the membrana tympani and ossicles has been brought to the notice of the profession so frequently that a repetition of these familiar facts would prove tiresome and uninteresting. We should, however, mention the fact that Kessel in 1875 and Schwartze in 1885 performed this operation for the relief of deafness only; while great credit is due to Sexton, who, in 1886, by his courage and skill, brought before the medical world the results of his numerous operations for the cure of chronic aural discharges, and later for the relief of deafness. It was Sexton,

therefore, who first proposed this operation, and performed excision of the membrana tympani and ossicles for the cure of discharge from the ear.

Burnett and others, however, soon followed, and by publishing their results did much to establish this formerly-condemned operation and bring it to the almost universal recognition of that part of the profession especially interested in aural surgery.

We are all familiar with the determined opposition this reasonable operation called forth from some quarters. It did, indeed, seem peculiar that advocates of rational medicine should have offered such strong and damaging protests against a surgical procedure which they could not but acknowledge was based on sound surgical principles; and especially did this opposition appear unreasonable when we remember that these same opponents were acquainted with many unfortunate patients suffering from a chronic discharging ear with its many dangers, which had not only resisted their every effort, but had, moreover, baffled the skill of other specialists.

The great danger to life arising from a suppurative disease of the middle ear is now admitted by all, and surely any procedure proposed for its relief is worthy of due and proper consideration, so long as the treatment thus suggested is not likely to produce bad results, and has for its support the same sound anatomical, pathological, and physiological backing that has characterized all the noted advances of modern surgery.

Those who have not taken kindly to this rational treatment have declared the operation to be dangerous, and therefore involving too many risks to admit of its becoming popular; to all of which we would ask whether this or any other proper surgical procedure could be more of a daily menace to life than a chronic discharge from a cavity the walls of which are composed of plates of bone that are extremely thin and surrounded by such vital parts as the brain and important blood-vessels? It is certain that a continuation of the discharge favors necrosis of these delicate plates of bone, and thereby induces, through continuity of structure or by direct communication, abscess of the mastoid, septic inflammation of the brain-substance and its coverings, or cerebral abscess, from which alone there are annually dying in the United States probably four thousand of her inhabitants.

At present it is difficult to say precisely just what class of cases are most likely to yield good results from this mode of treatment. Some few cases, regardless of the duration of tinnitus and vertigo or the degree of deafness, will give very satisfactory results. As a general rule, however, it is not well to expect too much improvement of hearing from a chronic, non-suppurative otitis media; and yet, in this class of cases, where tinnitus, pain, and vertigo are urgent symptoms, and have resisted other methods of treatment, we should not hesitate to suggest the removal of the membrana tympani and one or more of the ossicles for their relief. It has not been our custom in the non-suppurative cases to excise the entire membrana tympani unless it is greatly thickened, opaque, and firmly adherent to the tympanic walls. In this class of cases it is interesting to note the large number of patients in which the tympanic membrane presents quite a healthy appearance. It is, however, in just such cases that we remove only sufficient membrane to enable us to excise the malleus, the incus, or both.

In this modified operation it is very unusual to have any reaction, and we likewise avoid the pain and suppuration that has at times been reported. By this partial myringectomy, regeneration of the membrane is so slow that at present we can recall at least seven cases in which the original opening has remained for more than two years. Moreover, in our experience of over two hundred patients operated on, we are convinced that it is seldom necessary to remove the membrana tympani after regeneration has occurred, unless, of course, the operation had been performed in one of the suppurative cases, and where regeneration of the membrane had confined a dangerous necrosis of the tympanic cavity, or concealed a threatened mastoid involvement.

In order to obtain good results in the suppurative cases, we believe it to be positively essential to remove every fragment of the membrane, as this is the *only* way in which we can hope to obtain free drainage and procure an opening through which to properly treat the diseased cavity.

If the attic is involved it will be found necessary to excise both the malleus and incus, for these bones are very susceptible to carious degeneration, and where either is left behind, the suppuration is almost sure to continue; and even if the discharge should cease, it is likely to reappear at any time in the future.

In regard to the operation for excision of the stapes, which has met with such good results in the hands of Dr. Jack, of Boston, I can say but little, as my experience with this operation is limited to two cases; both of these, however, were somewhat successful in the relief of symp-

toms that have otherwise resisted treatment; but as each of these cases suffered from prolonged staggering vertigo as sequela of the operation (possibly due to my lack of skill), and as out-patients have generally recovered without this procedure, we have found no indication for advising or performing this more formidable operation.

In order to show the benefit that is sometimes obtained from apparently the most hopeless condition, we will review the detailed history of several unique cases, characterized by marked deafness, severe pain, and vertigo, all of which were relieved by operation.

Case I.—J. K., thirty-nine years, began to lose his hearing, accompanied by an itching of the external auditory canal, ten years ago. This loss of hearing was in both ears, and continued to grow worse until eighteen months ago, when he was suddenly taken with severe pain in each ear, radiating over the entire head. This pain continued without interruption for nine months; then, without apparent cause, the pain increased in such violence as to necessitate his going to bed and summoning a physician. Before relief could be obtained he became totally deaf in the left ear. At the end of two weeks the pain was so much better as to enable him to leave his bed. Some pain, however, has continued, and now seems to be confined to the right ear. On January 10, 1893, he consulted the writer (bringing a note from the family physician, to whom I am indebted for his previous history).

It is well to state that this patient has never had any discharge from the ear, nor does he remember having had at any time an injury to his head. Except for the inflammation extending along the manubrium, nothing of any importance could be seen to account for his suffering. The mastoid region presented a healthy appearance; the drum, however, was much retracted and firmly adherent to the promontory. His hearing-power was nil through aerial conduction of sound. Bone conduction was about three-fourths normal.

With the hope of relieving the pain alone, we suggested the removal of the drum and ossicles. On January 16, 1893, under ether, in the hands of Dr. Pontius, we removed the drum by the circular incision and extracted the malleus and incus in a piecemeal way, their vitality having been so completely destroyed by the process of necrosis that they crushed to powder under the slight pressure of a delicate pair of forceps. These bones had undergone the several changes which are more forcibly than elegantly expressed by the term "dry rot." I

believe this was the first and only case in the writer's experience where complete excision of the drum was accomplished without any hemorrhage, After operation the tympanum and canal were lightly packed with iodoform cotton and the patient kept quietly in bed. For three days the pain was in no way relieved, although the hearing was materially improved. From the third day, however, the pain and tinnitus grew less, while the hearing-power continued to increase.

On January 24, or eight days following the operation, the pain and tinnitus were so slight as to be barely noticeable. Could hear loud conversation at three feet; tuning-fork and watch were negative in result.

March 12, or about two months after the operation, reports that he has been free from pain and almost free from tinnitus for two weeks. Hearing-power slightly improved.

May 16, has not had pain since six weeks following the operation, and the tinnitus is now so slight as not to annoy him. Thinks it is growing less each day. Can hear ordinary conversation at six and a half feet, fork and watch each at four and a half inches.

It is difficult to say why this man should have suffered so severely, for surely the condition as above narrated does not seem to be a sufficient explanation. As regards tinnitus and loss of hearing, we consider this to be fully explained in expressing the belief that a thick drum bound down by adhesions, with anchylosis or other disease of the ossicles, acts as a foreign body, and as such produces tinnitus and deafness, the degree of which is in direct ratio to the extent of the disease present, and consequent interference with their normal func-We would, therefore, consider the removal of such disturbing foreign elements as not only sufficient reason for the partial or complete restoration of hearing, but it can also be hoped for and reasonably expected that we may secure relief from distressing tinnitus and ofttimes dangerous vertigo.

CASE II.—A. M., aged sixteen, applied for treatment August 10, 1890. When seven years old had scarlet fever. This was followed by discharge from both ears, which was continuous until the above date. Meanwhile, was progressively and rapidly losing her hearing. Suffered continuous pain, sometimes very severe; was totally deaf in left ear. After making many and various unsuccessful efforts to arrest the discharge and relieve pain, we suggested the removal of the fragment of drum and malleus. This we performed on December 9, 1890, after which the ear was packed with iodoform cotton,

and replaced by fresh cotton every one or two days.

December 20.—No discharge since operation; hears fork at five inches, watch at three inches, ordinary conversation at three feet.

January 26, 1891.—Tympanum entirely dry; hears fork at five inches, watch at six inches, ordinary conversation at five feet.

April, 1891.—No discharge since operation; hears watch at six inches, fork at seven inches, ordinary conversation at twelve feet.

December, 1891.—Slight improvement over the above.

July, 1892.—Hears watch at  $\frac{1}{80}$ , fork at twelve inches, ordinary conversation at fourteen feet.

May 24, 1893, or two and a half years after operation, hears watch at  $\frac{16}{80}$ , fork at seventeen inches, ordinary conversation at twenty-seven feet; no discharge since date of operation; health much improved; performs the duties of life quite as well as if she had never been deaf or suffered from pain in that ear.

CASE III.—H. D., sixty-two years old, applied March 10, 1893. Six years ago resided in England, at which time was taken with a severe pain in the right ear, which she thinks came from cold. Never had any ear-trouble before, and has always enjoyed good health. Was treated by physicians in England for three years, but received no benefit. Has been in this country for three years, and undergone treatment at the hands of many physicians and as a private patient at several hospitals, without beneficial results.

On March 10 last, or three months ago, she consulted the writer at the Jefferson Hospital, suffering extreme pain and greatly annoying tinnitus in the head. Never had a discharge from the ear, but has suffered from severe headache since early adult life.

The drum and external auditory canal, on examination, revealed nothing abnormal, except some inflammation covering the manubrium. The Eustachian tube was somewhat swollen, but inflation of the tympanum by Politzer's method was easily accomplished. This interference, however, gave her some increase of pain. By aerial conduction of sound she could hear only very loud conversation; watch and tuning-fork could not be heard; bone conduction, however, was quite normal. Aside from operative interference it was difficult to suggest or carry out a line of treatment with any reasonable prospect of securing relief, and inasmuch as she had undergone much treatment of the usual routine kind without in any way being benefited, we felt justified in

suggesting excision of the drum and malleus, which was performed on March 30, 1893.

For one week following operation she continued to suffer some pain, but it was markedly less severe. On the tenth day a slight discharge of pus was noticed, at which time the pain entirely ceased. The discharge became quite copious three days later. Sixteen days after operation the discharge was quite scanty and the pain returned. A free discharge, however, was re-established, and the pain again ceased, not to return again.

April 30, 1893.—Pain relieved; discharge entirely gone; heard the fork at one inch, watch at  $\frac{8}{80}$ ; ordinary conversation at six feet.

May 10, 1893.—Tympanum entirely dry; no pain; hears watch at  $\frac{20}{80}$ , fork at nine inches; ordinary conversation can be heard at the normal distance. Patient expresses herself as feeling entirely well; hears everything at church or opera.

CASE IV.—E. M., thirty-nine years old; first seen January 15, 1893. When four years old had a severe illness, which was followed by a discharge in both ears. This continued until eighteen years old, when the discharge ceased in each ear. Two years later she suffered from severe pain in the left ear for one week, when the drum ruptured, followed by the free escape of pus and relief from pain. The running continued for some weeks, then ceased, since which time she has been free from discharge or inconvenience of any kind until two years ago, when her hearing began to fail, accompanied by some "neuralgic pain" in head and distressing tinnitus. Is now totally deaf to aerial conduction of sound, the osseous conduction being quite normal.

After making unsuccessful efforts for her relief, I advised the removal of the ossicles and drum of the left ear, which we did on March 20, 1893. The operation was followed by considerable discharge for several days, but the hearing began to improve almost immediately and the tinnitus to grow less. The pain has been entirely relieved.

May 18, 1893.—Pain and tinnitus entirely relieved; hears tuning-fork at ten inches, watch at  $\frac{4}{80}$ , ordinary conversation at two feet; general health, which had been very poor before operation, is greatly improved; discharge has entirely ceased; tinnitus and pain effectually relieved.

CASE V.—F. B., aged twenty-five, consulted me September 21, 1889. In 1887 I had treated the sister of this patient for impairment of hearing, due to impacted wax; and, as she was im-

pressed with the idea that something unusually skilful had been done for her, she informed me of a sister living in Breslau, Germany, who had bean deaf from early childhood, and suggested that possibly we might be able to give her relief. She was advised to send for her sister, who presented herself about two years later, giving the following history: Has suffered pain ever since she was old enough to remember. At times it was so severe as to necessitate her going to bed, and could only be relieved by the hypodermic injection of morphine. This pain was not confined to the ears, but seemed to be general over the entire head. Does not remember ever having had discharge from the ears. Noises in the head, of almost every character, were very severe and caused her great annoyance. She expressed herself as being entirely satisfied if she could be relieved of the pain and tinnitus, as she had given up all hope of ever hearing again. She claims to have been treated without success in Berlin, Vienna, Dublin, and London, and to have had a "nerve cut" three different times with the hope of securing relief from the severe pain.

On examination we found the external auditory canal in each ear somewhat obstructed by an accumulation of inflammatory products, and very painful to the touch. The drum of each ear was congested, markedly thickened, and so much retracted as to be immovably adherent to the promontory. We found the Eustachian tube obstructed, which, however, promptly yielded to treatment, but without improving the hearing to any appreciable extent. On careful examination of the hearing-power, she proved to be totally deaf to all sounds, regardless of their pitch or character. The osseous conduction of sound, however, was perfect. Of course, the history and unfavorable results of the examination, except for the good bone conduction, compelled us to regard any hopes of improvement in hearing as improbable. However, feeling it our duty to at least make an effort to relieve the pain and tinnitus, we concluded to remove the drum and one or more ossicles, as might be necessary. Accordingly, on October 3, 1889, we excised the drum and ossicles of the left ear. The patient positively refused to take an anæsthetic of any kind, because a relative had died under its use. This was the first case of this character that I The pain was have ever done under cocaine. quite severe during the operation, but being a woman of determination and pluck, she stood her suffering very well. The malleus and incus both showed evidences of necrosis, particularly

		1					TT C				
	Operation.	Mal. and	inc.	: : :	" Incus.	Mal. and inc.	AH H B	intact.			: :
	Cause of dis- ease.	Scarlet	fever. Not known. La grippe.	ZZZ	tever. " La grippe. Scarlet	rever. Not known.	La grippe. " " Not known.	3 3	" " " La grippe.	Not known.	* *
	Time since operation.	3 yrs.	Io mos.	7 mos. 3½ yrs. 1 yr.	16 mos. 2 yrs. 3 "	2½ "	3% 3% 3% 3% 3%	3 ; e		74 g	2 2
	Watch.	==	42.75	234	***	No.	****	45 €	* ***	# # # \$ °	<b>≉</b> ⊗
-power.	Tuning-fork.	II in.		v v o	3 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Š	4 6 1 ii. 3 6 6 1 ii. 3 7 8 8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3 3	4 70 WII	- A	4 in.
Hearing-power.	Voice.	O. C. 19 ft.	21 t	9 19	, , , , , , , , , , , , , , , , , , ,	2 7	22 2 2 2 4 2 2 2 2 4 2 2 3 2 4	* 3 * 0	2 2 2 9 6 9	5141 <sub>N</sub>	" 12 ft. " 19 "
on.	Vertigo.	No.	* * *	: 3 3	2 2 2	3	2 2 2 2 2	3 3	: 2322	" " Little im- prove-	Ment.
Results of operation.	.eviaaiT	No.	2 2 3		Slight. No.	Slight improve-	ment. No. "	Slight.	Slight.	No. " But lit- the im-	proved. Slight.
Result	Pain.	No.	3 3 3	: : :	* * *	3	2 3 2 3 3	3 3		* * * *	: 3
	Discharge.	Š.	3 3 3	: : :	: : :	3	* * * * *	3 3		* * * *	3 3
	Bone con- struction.	Normal.	* * * * * * * * * * * * * * * * * * *	*XX:	323	Slight.	Normal. " " "	z z	* ** ***	2222	: :
ji ji	Watch.	No.	3 3 3	: : :	::- <u>-</u> g	No.	442°	3 3			3 ii.
Hearing-power.	. Aroì-gainnT	Nega.	No.	: 3 3	2 ii.	No.	r in. % " No.	2 3		No. ii.	2 in.
H	Voice.	Loud 2 ft.	No.	7 7 7 7 8 7 7 7	3ii. . 1ft.	L. C. 1 "	0. C. 2 " 21/2" " 1" " 3" Very L. 1 ft.	0. C. 3 ft.	6 LL 44	" I3 " 3 " No. 3 "	0. C. 6 " " 3 "
	Ear.	Ľ	2 2 2	Both.	* æ' *	Both	R. ". L. Both	3 3		***;i	Both O
	Vertigo.	No.	Yes.	, ,,	: : :	Severe	No. Yes. Severe 20 yrs. severe.	3 yrs.	7 mos. 3 ". 14 yrs. 5 ".	2 2 4 4	# K
	.ais.	No.	Yes.	Severe Severe No. No.	Yes. No. Yes.	No.	" " Severe No.	* *	9		3
	Tinnitus.	Š.			Yes. No.	Severe	No. " Yes. Severe 30 yrs.	IO yrs.	Severe Severe Yes. Severe Yes.	Severe. Yes. " 12 yrs. severe.	Yes.
uge.	Duration.	12 yrs.	9 " 19 mos.	No.	13 2,7,4 2,2,4		2 yrs.				
Discharge.	Recurrent.	S,		Š. Š.	Yes. No. Yes.	No.	Yes.	:	: ::::	: ::::	:. <b>:</b>
	Continuous.	Yes.		Yes.	No. No.	:	Yes.  No.	:	: ::::		::
	Sex.	Ä.		ΣŒ.	3 : Z	땨	3 × 3 × 3	ष्टं ३			∺,≱
	Age.	91		7	81 7	52	11728	53			35
l	.оИ	-	9 W	4 200	<b>≻∞</b> 6	2	F G G <b>4 G</b>	2 5	2 8 5 8 2 2	2 <b>4 7</b> 2 7	7.82

2 3	3	z	<b>z</b> :		: :	: :	:	z	3	z	2	3	. 3	: :	; ;	:	3	z	3	3	3	3	:	: :	: :	3	3	3	: 3	: :	: 3	: 3	: 3	: :	: :	: :	: 3	:	¥	: :	:	¥	3	3	¥	3	z	z	2
: 3	3	3	2	¥ ;	<b>3</b> ;			2	3	3	3	3	3	: 3	: ;	:	;	3	3	3	3	3		: :	: :	3	3	3	: 3	: :	: 3	: :	: :	:	: :	: :	: :	:	3	: :	:	3	3	3	3	3	3	3	3
13 "	∞ 3	" 9I	9 :	: 3	: × 0	. 7	: : 0	2	2% %	3 81	30 %	3, 01	3 2	7	. 67	3 yrs.	2%:	4	2% %	3	200	, ,	٠	13		4	4																						3 yrs.
##	*	*	\$ ·	<b>#</b> -	2 :	<b>2</b> •	<u>۾</u>	#	ģ	쌲	100	*	4	<b>R</b> •	<b>R</b> •	4	Ŗ	42	45	3	4	<u> </u>	£ .		į :	:	3	4	9 4	2 4	£ 3	<u>.</u>	<u> </u>	£ :	2		: 3	:											
7%" 6 "																										; N	4												3	٠,٠	<u>.</u>	2 in.	4 ?	3	, 4	4	; ~ ~	: '0 .	2
: :	3	3	3 3	: ;	: ;	: ;	: :	:	ä	ä	3	;	ž	;	:	: :	:	ž	3	š	3	ž	-	: ;	: :	:	=	:	*		; ;	: :	: :	: :	: :	: ;	: :	:							_				, <del>4</del>
, 12	, 25	31		2 :				'n	٥ •	,	, I	11 ,	,	3	, ,	- -	8	21	•	. 2	,,,	ì,		•	4	•	,												Ž		ž		4	, (*	פינ	,	-00	,	.4
	_	_				_		_	_	_	_	_	_	_	_		_	_	_	_	_	_	_	_	_	_			_	_	_		_	_				· -		_	_		_	_	_	_	_	_	<u>.</u>
= =	3	2	Slight.	: :	: :	: :	: ;	No.	z	3	¥	*	3	*	: ;	: :	3	ž	3	3	2	¥	*	: :	: :	=	Slight.	3		140.	Singnt.	: ;		: ;	Slight.	: :		Not much	improved	: ;	:	Š.	3	3	3	×	¥	z	¥
Š.	•	2	Slight.		: :	: :	: :	*	ž	z	2	3	3	ž	: 3	: :	:	3	:	=	Slight	9 7		: :	: :	:	z	3																					No.
" Slight	:	ž	: :	: :	: :	: :	:	:	3	ž	3	ž	:	,	: :	:	:	3	z	•	¥	ž	į	: :	: :	:	2	3	: :	: :	: :	: :	: :	:	: :	: :	: :	:	3	: ;	:	*	3	z	z	:	ž	z	=
::	Slight.	Š.	: :	: :	: :	: :	:	:	:	3	3	3	3	;	: :	:	:	*	3	3	Slight	N.	;	: :	: :	:	3	3	: 3	: ;	: 3	: :	: :	:	: :	: :	: :	:	3	: ;	:	2	:	3	z	3	3	3	:
::	3	<b>:</b>	* *	: 3	: 3	: 3	: :	: :	3	z	¥	ž	z	3		: ;	:	3	z	:	3	÷	3	: 3		<b>*</b>	X "	¥	ÿ		: 3	: :	: :	: :			; **	;	3							29 29			3
3 3	ġ	¥ ,	<u>.</u>	. i	: ,		: :	3	*	•	:	3	:	-		<b>F</b> •	<u>۔</u>	4		<u>-</u>	Ş	4		į,		:	=	4	: 4	3 4	2 4	2 4		÷	: :		_	 ;		_	_	_	_	_	-				e.º
 									_	_		_		_		_		_		-		_	_		_	-									: :		:			-	-	=	:	:	•	-	-	-	<del>-</del>
<u>€</u> 4	_	9	٠ 17	•	4 (	~ ·	4	w)		<b>H</b>	2,1	,,	? <b>-</b>	-	+ 0	× 1	_	4	7	-	_		. 2	-	_	_		-	٠,									-		? •	<u>-</u>	8	71	_	4	- 64	) LC	. 4	-
ω, , ,			00						4	4	, r.	, 2	2	,	٠;	1	9	, ,	, ,	13 6	3	; ,	7 •	4 +	- ·	: N	» ":	,	; ;		4 5	4 (	7	11	. · ·	_ ;	<b>1</b>	7			; ; =	4	ω 3	4	. 4	: - (1	. 4	4	. <b>4</b>
3 3	3	<b>:</b>	: :	: 3	: 3	* *	: :	: :	2	3	3	3	3	ÿ		: :	:	3	ï		ž	ž	¥	. 3	: 3	: '	ï	0	, <b>*</b>	3	: 3		. 3	: :	: 3		. 3		3	3	: :	ž	z	¥	ž	=	3	z	3
" Both	3	* ,		. Δ	4 3		: 3	٠,	i	3	3	2		į =	3	: ;	: 6	20 20 10 10 10 10 10 10 10 10 10 10 10 10 10	i	æ	¥	÷	_	į	3	:	z	<u>_</u>	iρ	; ;		-	រុំ ៖	: :	Doth	9	; ;		_	iρ	<b>;</b>	:	2	ij	:	Я.	3	ž	z
4 E	3	6		ė z	: 3	3		2 7	·	3	z	I VI.	2	, ,	2			:	_	_			2 1		7 1	/	15 yrs.	Ves Cr.		3	3	•	: 3	1.10	Ver Sult.				×	3	: :	:	z	ģ	z	¥	3	3	Yes.
<del></del>	:	:	:	:	:	 :	_	:	:	:	è.						. ,		_			•	_					2	ž		. 2	-	_	. ,						_		•	_		•	_	_	ž	_
: :	:	:	<u>:</u>	:	:	:	:	:	:	:	Z	=	*	-	3		-		: 	-	_	_	_	_	_	_	8. i					_		_	-	-	_			_		-	_	_	<u>.</u>		<u>.</u>	_	
Yes.	<b>:</b> :	: :	: 3	3	3	3	*	: :	:	3	3	3	=	3	3		: ;	:	=	¥	3	3	3	3	3	1	20 yrs.	Ves	;	=	:	ä	3	*	: :	3	ŧ		÷	*	: :	: :	z	z	٠,		3	:	:
		:	:		:	:	:	:	:	:	:					:	:	:	:	:							:			_		:											:					:	
; ;	:	:	:	:	:	:	:	:	:	:	:	:	:		:	:	:	:	:	:	:	:		:	:	:	:	:		:	:	:	:	:	:	:	:	:		:	:	:	:	:	:	:	:	:	:
::	:	:	:	:	:	:	:	:	:	:	:	:	:		-	:	:	:	:	:	:	:		:	:	:	:		:	:	:	:	:	:	:	:	:	 :		:	:	:	:	:	:	:	:	:	<u>:</u>
Z.F.	: }	Ę s	: 3	[=	Σ,	<u>'</u>	; ;	-	; ;	Ξ	;	ä	:	:	[z	<b>&gt;</b>	;	<u> </u>	.;;	Ë	٠ <u>.</u>	:	Σ	3	:	-	:	3	z	Į.	; :	;	:	>	1 (2	>	:		:	ï	-	: [	Ξ,	Ξ	F	=	3	ž	땬
53	42	31	္က ;	3,5	3 %	} ;	2:	57	20	47	64	48	47	2	3,5	4,	4	33	35	42	79	47	7.3	1,	£ ;	2	62	2	3 ;	2 5	3 5	,	5 :	40	જ દ	? ;	1:	}	t	, (	2	57	84	49	30	33,	41	4	38
30 %	31	32	33	ج 4 ہ	3,	3, 5	20	8	3	9	41	42	- 2	? :	‡:	<del>.</del>	0	4	8	4	0	, ,	, :	,	2	4	22	4	2	20	္က ရ	2.6	3 4	3 3	7 5	3,	3 3	S	3	3 3	59	8	8	2	71	72	73	7	3

,	Operation.		intact.  Mal. and inc.	Inc., drum	Mal. and	inc., drum intact.	3 3	3 3	3 3	: 2	3	: :	3 3	: 3	* *	: 2	3 3	*	Mal. and inc.	= =	Inc., drum	***************************************
	Cause of dis- case.	Not known.	3 3	* * *	3 3	×	2 3	: 3 3	: 3 3	: 3	3	3 3	3 :	: :	* *	: 3	: :	3	3	: :	3	3
	Time since operation.	2½ yrs.	II mos. 3 yrs.	:::	3 " I2 mos.	9	, r.i		z yis.	3 7 mos.	12 "	* *	2 to		4. 2.		3 yrs.	II mos.	3 yrs.	: : : :	_	
1	Watch.	o S	3 <b>4</b> 5	o SN SN SN SN SN SN SN SN SN SN SN SN SN	: 43	<b>4</b> 2	#-	2-4:	ģ	: :	3	* 4	R + R ·	# #	♣ -	2 ⊀2	<b>₹</b> ,2	; ;	4	42 .S	<b>.</b>	*
Hearing-power.	Tuning-fork.	2 in.	4 rv 3 3	4 π 3 3 3	% o		9			. z	8	No.		4 4	41	. 3	9 6	. 4	. <b>.</b> 2	7 7	+ W	*
Hearin	Voice.	O. C. 4 ft.	, 21 ,,	3 3 3 H 00 00 S 3 3	3 B B	" 12 "	» 91 »	8 8 9		2 !	"No	; ¢	. 4 4	: ; mo : ;	40	: ; 0		; 0+ ;	12		; 000 3	" I"
	Vertigo.	No.	Slight. No.	Slight.	ž o	Slight.	٠ × ر	. e. c.	Singar.	Not much	improved.	* C	; e :	: 3	3 3	: 3	: :	Slight.	No.	Slight.	:	:
Results of operation.	Tinnitus.	No.	* *	" Slight.	Š.	3	Yes.	No.	Sing in.	: :	Š.	Slight.		_	Slight.	: :	Š.	3	3	3 3	Slight.	No.
Result	Pain.	No.	3 3	* * * *	3 3	*	2 3	: : :	: 2 :	: :	3	: :			Š.	: :	3 3	=	*	* *	3	* —
	Discharge.	No.	3 3	* * *	* *	8	* \$		: 2:	: :	Slight	Š.	Slight.	Š,	* *	: :	2 2	3	3	: :	3	* —
	Вопе соп-	Normal.	* *	* * *	; ; <del></del>		: :	: : :	: 3: 1	: :	ž	3 3	<b>y</b> ;	: :	2 3	: 3	2 2	¥	3	3 2	*	3
ower.	Watch.	-≰6	<b>4</b> 2 <b>4</b> 2	S. s.	2 2	3	3 3	-R:	Š.	: :		42 3	Š.	₽ S	: :	- ♣	Š.	*	3	<b>~</b> ;	43	-#2
Hearing-power.	Tuning-fork.	2 in.	3 3	100	Š,	3	2 ii.			: ;	2		;;	w 4	, H		3 3 M		3	. ii.	, r.	No.
	Voice.	0, C. 4 ft.	;; mo ;;	2 2 2 4 W 4 2 2 2	L. C. 1 " " 2 "	» I »	0. C. 8	9	-	: , , , , , , , , , , , , , , , , , , ,	. 4	* · ·	; ; m	: ; o 4	3 3	. 12	; ; 0 Y 2 Z	; - :	2	40	9	3 I 3
	.xsH	L.	3 3	z i z	Both	ä	* 3	3 0		: :	3	٠,	i 22 :	: :	2 3	Both	٦×	z	z.	3 3	z	Both
	Vertigo.	Yes.	Š.	γes.	9 yrs. severe. 4 yrs.	severe.	severe.	: : :	: 3 :	: :	3	: :	::	: :			::	Yes.	2	Š,	;	Yes.
		Š.	3 3	333	* *	*			Š.	Yes.	Š.	Yes.	Yes.	ė,	Slight.		Yes.	:	:	Š.	=	Yes.
	Thankus.	Yes.	3 3	333	10 yrs. severe. 12 yrs.	severe.	severe. No.	: <b>:</b> :			Š.	X es	Yes.						¥	Š.	:	Yes.
uge.	Duration.							, a :	~∞:			12 "	11 yrs.	; ; 0 0	9 mos.	2 7	9 6	, 8 , 8	,, 41	4.	+ w	*
Discharge.	Кесштеві.	:	::	:::	: :	:	:	: :5	ġ :	Yes.	:	Yes.		: :			:	Yes.	3	:	: :	Yes.
	Continuous.	:	::	: : :	: :	:	Yes.	: 3	Yes.	: :	Yes.	: %	<u>;</u> :	Y es.	2 3	: 2	2 2	:	:	Yes.	3	*
1	Sex.	Ä	* Fi	3 3 X	3 3	3		, i					(교							zi z		•
1	Age.	19 9	28 8 59	<u>60 1</u>	2 64			- 60					28,							5 12		33
	No.	76	7%	% 80 81	83	8	80,9	8	, ∞	2 2	. 6	6,6	58	Q 9	36	≥ ∑	<u> </u>	0	Ò	20,5	ō,	8

_									_				_	_	_			_		_	_			•			_	• ''						_			_	_					
= = =	and inc.	: :	3	3 :	3	<b>:</b> :	: :	: 3	: :	: 3	3	Drum and	malleus.	¥	3	3	z	3	¥	z	3	3	3	¥	z	×	. 3	: 3	*	3	3	3	z	ı	2	z	z	3	3	ž	<b>z</b> :	<b>:</b> :	<b>:</b>
	fever.	: 3	3	3 :	2	Measles.	Scariet rev.	: 3	: ;	: 3	3	Diphtheria.	4	Scarlet fev.	3	¥	2	3	3	2	3	ž	. =	3	¥	¥	: 3	Western	MCASICS.	3	Diphtheria.	×	3	:	3	Mumps.	3	3	3	3	: :	<b>:</b>	:
2 3	12 Elos.	4×	2 VIS.	4	4	* :		1 0	lo mos.	13	3 2	: ∞	,	» 8I	13 "	3 yrs.	8	o mos.	, , , ,	13 6	; )=	3	, 8	"		. (		4,	ن د	۳ پ	, <b>.</b> ~	; 0 00	; -	3 1	, I	; H	"	4			1 yr.		6
2 2 4	£ .	<b>4</b> 4	4	7	÷,	٠ <u>٢</u> -	Ç:	<b>2</b> 3	: •	<b>#</b> =	7	90	}	e g	숙	-26	og g	7	**	4	40	<b>4</b> 5	4	4	-#3	2	2	: :	3	3	- <b>¦</b>	~°	2	<b>\$</b>	~≒	<b>4</b>	\$	ģ.	ę	42	<b>4</b> 2 :	: •	Ç
" X	; ;	. s								4 ,					;						. 4			3	; ;	3		4 4								3.							
3 3 3			· -		_	3 3		_	-			_			•			_					:		*		-			_	_				3			: :					<u> </u>
, U	_	7 2		12	2	81	12	O 1	-	•	+ oc	7		"	2	00	m	64	n	v		13	¥	=			20	9				. (1	4	12	4	m	N 1	9	<b>:</b>	61	3	, .	4
i	· `	: : 	- 		: 				_		_	_		<u> </u>	-	3 	<u> </u>	<del>-</del>	<del>-</del>	• —	*	·		*			_		-	_	<u> </u>	<u> </u>	_	<u> </u>	-	= :	-	•	_			_	· 
No	: ;	: :	¥	= :	:	: :	: :	: 3	: 3	: 3	¥	z		¥	z	z	2	z	3	z	z	z	ŧ	Slight.	Š.	z	*	: 5	3	3	3	¥	z	¥	z	<b>:</b>	: :	<b>:</b> :	=	<b>:</b> _:	<b>:</b> :	: :	:
Slight.		: :	3	<b>:</b> :	:	2 3		. 3		: :	*	z		=	z		*	×	=	:	3	3	*	Slight.	No.	ä		: 3		3	:	z	:	3	z	<b>3</b> :	; ;		<b>3</b> :	<b>z</b> :		: 3	:
* * *	: ;	: :	*	: :	:	: :	: :	: :		: 3	:	•	z	ž	:	<del>-</del>	ž	<del>.</del>	3	2	:	ht. Slight.	No.	Slight.	No.	×		: :	:		3	:	:	=	:	: :	: :	. :	. :	<b>=</b> :	: :	: :	:
Clight	Singate.	Slight.	No.	z ·:	:	3 3	: :	: :		: 3	:	. 3	-	3	×	·	•	3	3	3	3	Slight	No.	Slight.	No.	3	:	:	3	:	z	:	3		=	= ;	: :	= :	: :	<b>:</b> :	: :	: :	— ;
	:	: 3	:	3 :	:	: :	: :	: 3	3	: 3	3	ŧ		=	z	:	3	3	z	2	3	3	=	3	z	3	z	:	:	;	z	2	3	3	2	: :	: ;	: :	:	: :	: 3	: 3	:
48484	: -		43	<b>پ</b> -	₽,	è s		R Z	:	: 3	ä	3		<b>-</b> ‡	<b>-</b> ₽	2	#R •	-E	o N	<u> </u>	3	z	• <u>\$</u>	3	-\$	Ž	:	-	-\$		Š.	z	-\$	No.	3	= :	: :	: •	₡ •	2,	Š	 : :	:
% in.		٠ ۲	,, /	, 6		: :					8	" I		ۍ ب	4	;	:	;	4	;	; 1	3 %	5	, 4	. 4	"	÷	:	, ,	; 	Š.	¥	2	3	z	: :	: :	<b>.</b>	in.	; ;	: :	: : m:	; N
3 3 3		. »	; 2000	, ; 9	: :	. :		: - 1			300	"		3 .	; ;	*	2	: :	"		ર ∞	; =	,, 9	3	. "	"	· ×		"	3	3	, ,	=	3 :	3	2 2	: :	2 3	: :	: ;	Š	: 3	;
:::	:	: 3	z	3 3		: :	: 3	: 3	3	: =	z	=		z	z	=	2	ä	z	3	3	¥	z	z	:	×	÷	z	ï	¥	2	z	z			: :		: :				: :	
* * _	i :	: 3	<u>ج</u>	٠,	. د	Poth		Roth	3 3	: :	3	¥		<b>~</b> ;	3	= ,		≃:	_ ;	3	:	Both	Ж.	Both	æ.	<u>, , , , , , , , , , , , , , , , , , , </u>	į	:	3	<u>ج</u>	:	:	i.	Both	3	<b>.</b>	: :	: :	; ;	: :	: 3	: 3	:
S. 3	3 3	: 3	=	3 3	: ;	: :		: 3	3	. 3	3	ž		3	3	<b>:</b>	3	3	z	3	3	Yes.	Š.	Severe	9 yrs. Yes.	Ş	: =	:	z	÷	:	3	2	3	3	: :	: :	: :	: :	: :	: 3	: 3	:
o's s	= 1	: :	ş	: :	: :	: :		: :	-	: :	z	:		3		;	:	3	3	=		Yes.	No.	Yes.	8	:	3	2	ŧ	:	3	3	2	2		: :	: :	: :	: :	: :	: :	: :	
No.	ġ ;	Yes.	:	Š.	:	: :	: 3	: 3	3	: 3	3	:				Z	3	_	Yes.	S	3	Severe	No.	Severe	12 yrs. Severe	8 yrs.	:	×	3	3	*	3	3	=	¥ :	: :	: :	: :	: :	: :	: 3	: 3	
3 2 2			12 "	4 4		; ;		. z	÷		1 % "	;		; (1)	18 mos.	;	9	22	<b>5</b> 3	3 yrs.	8 mos.	19 yrs.	4	, IZ	∞ 3	8	3	: 2+		*	8 mos.	3 yrs.	; ; 7	;;	4	; ;		: : - :		; ; m	4:	; ;	•
Yes.		Yes.	z	:	:	:	:	:	:	: :		:		:		:	:	:	:	:	:	Yes.	:	Yes.	:	-		:	: :	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Yes.	3	:	:	Yes.	: :	: :	-	3	:	z	:	:		=	= :	: :	: :	:	:	=	:	:	:	:	:	Ves.	3	;	¥	ž	;	3	: :	: :	: :	: :	: 3	: 3	: :	: 3	: 3	: 3	
F. X F		:								Ŀ						_		_			2 :		3		×.											: >				_		: 3	
1109 19	3	113 31				117 19		120 11		122 5		124 8		11 S		127 10	2				132 5		34 16	135 31	136 21	27				141 8				145 7		147					152 0		
Z = =	:	: <b>=</b>	Ē	Ξ:	-	= =	. :	12	-	12	12	=		125	ä	-	-	ï	Η,	Η,	Η,	-	=	۳,	<b>H</b>	=	-		17	14	14	7	14	ř	7	i.	ž ,	7	٠, ;	=' ;		- 7	•

the malleus, which was only about half its natural size, and through necrosis resembled in appearance and structure a piece of dried dead wood, that one could with but little force crush between the fingers. The meatus was packed with iodoform cotton and the patient kept quietly in bed for three days. On removing the cotton she said she could hear our conversation and the noises in the street. The tympanum was dry; pain almost relieved; tinnitus much less, and patient feeling happy.

October 12, 1889.—There has not been a drop of pus; tympanum entirely dry; pain gone, and only a little pulsating tinnitus. Hears the fork at nine inches and watch at  $\frac{8}{80}$ , ordinary conversation at fourteen feet.

November, 1889.—All the above good results continue. The patient feels so well satisfied with the results of the operation on left ear that she now makes a request to have the other ear operated on, as the pain still continues in it. This, however, we refused to do at present.

February 6, 1890.—Again the patient returned to have the right ear operated on. She was advised to wait a few months longer, so as to ascertain definitely whether the results of the operation on the left ear are positively permanent.

May 9, 1891, or about eighteen months from the date of first operation, the right ear was operated on and a similar condition of the drum and ossicles found. The results of operation were quite as satisfactory.

January, 1892.—Patient has been entirely relieved of pain since second operation; hears perfectly well; tinnitus entirely gone; general health excellent, and likes America so well that she has concluded to make it her future home.

May 9, 1893.—Has been entirely relieved of pain from date of second operation; tinnitus has not returned; hearing is entirely normal, and all of these favorable results from the operations have been permanent for over two years.

Case VI.—B. S., aged eighty-one. In April, 1888, this patient consulted me for deafness, tinnitus, and vertigo. He gave the following history: Forty years ago, while exposed to the sun's rays, was suddenly attacked with slight pain in each ear. He became dizzy, fell to the ground, striking his head with much force, and was carried home in a semi-conscious state. For three years prior to this attack had occasionally complained of a "fulness and queer feeling in the head." For seventeen weeks he suffered so much from vertigo as to prevent him from

leaving his bed. From the time of this accident, which was in 1848, to the year 1889, covering a period of forty-one years, he has suffered more or less from vertigo, increasing tinnitus, and deafness. For the past ten years the vertigo would appear without warning, and with such severity as to necessitate his having an attendant with him constantly. During this period of ten years the tinnitus has correspondingly increased, and the hearing-power in like manner become progressively defective. was entirely deaf to aerial conduction of both watch and fork: loud conversation could be heard at one foot. In his efforts for relief he consulted many physicians, making three trips to Europe for this purpose. In September, 1889, we suggested the removal of the drum and ossicles. This proposition was accepted with great reluctance on account of his age, and more especially because he had been advised not to submit to any surgical operation. We operated on the left ear September 12, 1889, and found the drum in this case thickened and adherent to the tympanum; likewise the ossicles had undergone the above peculiar changes due to necrosis. Six days after operation his hearing and tinnitus had somewhat improved; no pain nor disturbance of any kind followed the operation.

September 27, or fifteen days after operation, he states that nearly all pain and tinnitus has been relieved; has had but little vertigo.

October 18.—Pain entirely relieved; tinnitus much improved; slight vertigo remaining.

November 1, 1889.—Tinnitus and pain entirely relieved; hears ordinary conversation at seven feet; has had but two attacks of vertigo in three weeks.

April 6, 1890.—Operated on right ear with similar good result.

July 6, 1890.—Has just returned from Atlantic City, and reports himself as entirely free from pain, vertigo, and tinnitus; hears ordinary conversation at sixteen feet, watch at one inch, and fork at four inches.

September 12, 1892, or about three years since first operation and two and a half years since the second; has continued in good health, except a slight attack of dizziness, which, however, lasted but a few days.

April 14, 1893.—Has just returned from a trip to the Pacific coast, where he spent the winter and enjoyed good health, being entirely free from tinnitus and vertigo. He hears very much better than men usually do at his time of life.

In the foregoing list of one hundred and

fifty-four operations it will be found that from Cases 15 to 84, inclusive, we record sixty-nine patients presenting the non-suppurative variety of middle-ear disease. Many of these patients suffered from distressing tinnitus, severe pain, staggering, vertigo, and marked impairment of hearing, while others complained of one or more of these same symptoms in a much less degree. Their ages range from twenty-one to eighty-one years. The time in which the patients suffered from one or more of these symptoms varies from two to forty years, while the time elapsing since the date of operation is from three months to four years. The improvement in tinnitus and vertigo has been in many cases most striking and satisfactory, notwithstanding the little hope that could be offered for their relief, in some of the cases, before operation. The probable improvement of hearing in this class of cases is, of course, not marked by so many favorable possibilities as in the suppurative variety, and yet a perusal of the carefully-recorded results will, we think, be convincing that the operation in selected cases is now justifiably demanded. From the results obtained in the class of cases that would properly come under the title of this paper, we beg to offer the following conclusions.

First, however, I should like to remark that this is an age when the public wish to exact from the profession a promise as to the definite outcome of any prospective operation. It is of course proper and desirable that the probable result of an operation under consideration should be fully and carefully explained to the patient and his friends. It is well, however, that this should be done in the presence of your assistants or other auditors. A disregard of this simple precaution has caused some honorable physicians, who had worked hard for the best interests of their patients, to be summoned into court by designing and evil-minded persons, who enter suit for damages because a supposed promise had not been fully realized. We would, therefore, begin our conclusions with,-

- r. Never promise positive results from an operation on the ear for the relief of tinnitus, pain, suppuration, and vertigo. This promise will often be exacted, but the present status of such surgical procedures is not sufficiently defined to warrant us in promising the results which we may hope to attain.
- 2. Probably no operation in the entire range of surgery (if carefully performed) is attended with so little disturbance, either local or constitutional, as excision of the membrana tympani, malleus, and incus, when not complicated with necrosis of the tympanum; in fact,

there are very few diseased conditions of the human economy that are so prone to be productive of good results as is excision of the membrana tympani and ossicles in certain eardiseases.

- 3. Tinnitus, vertigo, impairment of hearing, and pain are almost certain to be relieved by the removal of the drum and ossicles, if not dependent upon some structural changes in the internal ear.
- 4. The longer the middle-ear disease has existed (as characterized by tinnitus, progressive loss of hearing, pain usually not well defined, and possibly vertigo) the greater is the danger of some serious structural lesion of the internal ear, and therefore the less hope of materially improving the hearing-power; and yet, even in extreme cases, the tinnitus, vertigo, and pain are more or less benefited, sometimes markedly so.
- 5. If, after due and proper efforts to relieve progressive aural diseases, you do not produce a speedy and marked improvement, no time should be lost in performing the radical operation; for by delay an internal ear complication may have become established, and this always makes probable benefit more doubtful.
- 6. It is not well to express too much hope that the operation will materially improve hearing in long-standing, non-suppurative cases; and yet, when the chances are so much in favor of its producing entire freedom from tinnitus and vertigo, and especially since there are such great probabilities of a rapidly-progressing disease becoming arrested from the date of operation, it would indeed seem unfortunate if such patients were not offered the benefit of this doubt, if such it can be termed.
- 7. In all cases where the membrana tympani is thickened, markedly retracted, and made firmly adherent by old inflammatory products to the tympanic walls, and where in this same connection you find the ossicles completely anchylosed, the function of these parts under such circumstances is of course entirely suspended; therefore, in consequence of this condition, this part of the conducting apparatus can be regarded only as a foreign body, and, as such, the only rational hope for relief is through removal, which will in the majority of cases relieve tinnitus and vertigo, while at the same time improvement in hearing can reasonably be expected on account of the opening thus formed admitting the sound-wave which impinges directly on the stapes and fenestra rotunda.
- 8. As a preventive of necrosis of the temporal bone, mastoid abscess, aural polypi, and

serious brain-complications (when the result of chronic aural discharge), the suppurating ear should not be allowed to continue and thus become chronic. If, therefore, under the usual methods of treatment the discharge does not permanently yield, it is certainly good, and I might say imperative, surgery to promptly extract all fragments of the membrana tympani and necrotic ossicles, for in so doing you have taken the only rational step to produce a cure of this always dangerous discharge by first removing all foreign matter and thereby establishing a free drainage, and, furthermore, giving an opportunity of properly treating a diseased cavity that otherwise would be inaccessible; and inasmuch as the writer has not met with any failures in this class of cases (when unaccompanied by extensive necrosis of the tympanic cavity), he is forced to express the belief that timely surgical interference cannot be too strongly urged, for by so doing you eradicate the primary disease, and thus prevent these always serious and ofttimes fatal complications.

SCABIES: ITS SYMPTOMS, DIAGNOSIS, AND TREATMENT.

By J. ABBOTT CANTRELL, M.D., Instructor in Dermatology in Jefferson Medical College; Dermatologist to the Philadelphia Hospital and to the St. Agnes Hospital, Philadelphia.

SINCE the influx of certain elements of civilization to American soil we certainly have had a decidedly large increase in the number of cases of scabies, and as there will be no abatement until the huddling together of these people is done away with, or until they be placed under better hygienic conditions, it is likely they will still further increase; and as we all should be on guard, that we may be able to cure all cases as soon as possible, I will give you this morning the symptoms, diagnosis, and treatment of this affection.

Scabies affects certain portions of the body, and attacks the body in such a way that all those affected with it suffer innumerable tortures from the diverse points of itching, and, as the disease is contagious, it is well that we know something of the appearance of the disease upon the skin, the localities affected, and the cause of it.

The disease being one of parasitic origin, is caused by a small animal,—the Sarcoptus or Acarus hominis,—the female parasite being larger by double than the male. It is a whitish, opaque body, measuring from one-seventh to one-fifth of a line in length and one-eighth to

one-sixth of a line in breadth, and as the female is the cause of the lesions of the skin, the male dying shortly after impregnating her, it is to her destruction that we must look.

Shortly after impregnation the female enters the skin by burrowing beneath the surface, in like manner to a mole entering the ground, and, as she progresses, enlarges the burrow and at the same time deposits eggs, and after laying a certain number-about six or eight-she The young parasite, after being hatched, reaches the surface of the skin by means of the free extremity,-that through which the mother entered,—and as she reaches the surface meets the male, becomes impregnated, and then immediately burrows and goes through the same course as her mother before her; and as these conditions are likely to go on indefinitely without they are soon checked, you can see what they will be in a short time.

The appearance of the burrow upon the skin is that of a darkish streak, which is made by the fæces of the parasite; it may be either straight, curved, or tortuous in character, and ranges from one-eighth to an inch or more in length. One end, being free, is sometimes marked by a small vesicle or pustule; the other is blind, and here the mother parasite lies as a foreign body. In fact, the patient will not come to you until the condition has reached the maximum, -about one month after contagion,—complaining of the itching and a skin eruption, and as the burrow is now very well marked, you may find it upon those portions of the body where it is the warmest.

On inspecting the patient, examine all portions of the body, as you have often seen me Do not be satisfied with a peep. Have the patient strip positively as far as the waist. Look first at the hands; examine the sulci between the fingers, the wrists, but do not conclude that the case is not scabies if you do not find anything upon them, because in Americans, who are, as a general rule, cleanly, we often find that the hands are unaffected. inspect the bend of the elbow, the axillæ, and parts around the front of the shoulders, the lower part of the abdomen, the lumbar region, and the nipples and breasts of the female, the buttocks and inner parts of the thighs and genitals of the male. If the patient be an infant in arms, look at the face, as this is the portion that comes in contact with the breasts of an affected mother. The feet of infants must also be examined.

If you have persisted in this examination, you will find evidences of the disease. From within the burrow you can remove the parasite

upon the head of a gold needle; but, unfortunately, this cannot always be done, and at such times a knowledge of the situation of the disease will, as a rule, suffice. In this condition you will also find the evidences of decided itching in the accompanying dermatitis.

After examining the patient and being fairly satisfied that the diagnosis is correct, the next thing would be the treatment. But suppose for an instant that you are doubtful what are the diseases that may resemble it, and vice versa.

Eczema is not likely to be so diffuse; not found in the usual scattered sites of scabies; will not be the diverse points of itching; lesions are not likely to be multiform, but there will be a moisture, with some infiltration. The itching in eczema is marked at all times, while that of scabies is more so after disrobing for the night.

Pediculosus Vestimenti.—Parasite, as a rule, easily found in the seams of the clothing; the upper part of the chest and back are affected, while these are unusual sites for a scabies; hands are never affected; no burrows; the outer sides of the thighs rather than the inner.

Urticaria. — Lesions disseminated, while scabies may be found in the usual sites; but if urticaria be present in the case, as I have seen in a number of instances, you must certainly find the burrow, and then your diagnosis is undoubted.

Being perfectly satisfied that the diagnosis is correct, we want to know something of the treatment. Naturally the first thing is to procure extreme cleanliness. This is best done by using some common soap, placing the patient in a bath-tub, and directing him to lather himself well, rubbing all parts, and then rinsing all over the body. If by this process you irritate the skin a little, it will the sooner be cured.

Immediately after the bath you must rub into the affected parts the chosen parasiticide, placing on the patient a clean suit of underclothes, rubbing the ointment on every evening, and allowing this underwear to remain on the patient for at least three or four days. By this means you have the ointment in constant contact with the affected parts, and thus, I believe, more rapidly cure the disease.

In the treatment of this affection sulphur seems to have held, and to still hold, the first place, in whatever form it may be prescribed. The other remedies that may also be applied are naphthol, styrax, and balsam of Peru.

I will speak of each of these remedies as I show you the cases.

The first cases are a mother and her child. Examining first the child, which is about four months of age, you notice the eruption is scattered over the hands and wrists in large pustules. You will also note the same condition on the feet and ankles; and as the child is nursing, you see that the face is well covered with the pustules also, and here on the left side of the neck I show you a burrow; the buttocks, thighs, abdomen, and back share the same condition.

The mother, you note, has no lesions upon the hands. This I have seen in a number of instances when the patient has been an American. So, as I have often told you, do not say that scabies is not present because the hands are free.

For the mother I prescribe the following:

R Sulphuris sublimatum, 3i; Adeps, 3i. M.

And for the child:

R Sulphuris sublimatum, gr. xv; Adeps, Zi. M.

Directions will be given that each patient take a bath this evening before retiring, and will cleanse all portions well, then will be applied the ointment to every point of disease, after which they will put on a clean suit of underwear, and every evening for three or four days they will continue the use of the ointment, at the end of which time they will take another bath, and go through the same performance. At this time it will be well to examine them, and, as a rule, they will be well of the scabies.

The next case is that of a young man (Pole by birth), and his condition has existed for some time. This you find in this class of people always as well marked as here. Having the patient strip, you find that the eruption is on the usual sites, and here I show you several upon the penis. Here upon the under surface I show you a burrow; it is about a quarter of an inch in length. The young man states that the condition has existed for four months, and that he has not had any treatment. Therefore, from his being rather timid about taking a bath, and not receiving any advice of a physician, you can readily understand why the affection has gone on to this proportion.

In prescribing for a case as bad as this, you may use remedies that are somewhat stronger than in the preceding cases, remembering that we have a decided eczema here, and, if possible, do not make this any worse; but as we

have also a tough skin, we will not be likely to make the eczema more prominent.

B. Sulphuris sublimatum,
Olei cadini, of each, 3ii;
Cretæ præparata, 3iiss;
Saponis viridis,
Adipis, of each, 3i. M.

This is the Hebra modification of Wilkinson's ointment, and in such cases as these there is nothing better; but in the majority you will be obliged to dilute it one-half. This is applied after the preliminary bath, and used as in the preceding cases.

If this ointment appears to disagree with the patient it may be changed to the following:

R. Sulphuris sublimatum, 3i; Balsam Peruviana, 3ss; Adipis, 3i. M.

And the same instructions given as for the former ointment.

Sometimes I have prescribed the following, which I prefer in most cases:

R Sulphuris sublimatum, Naphtholis beta, of each, 3i; Adipis, 3i. M.

With this preparation I have seen better results than with the others, and have in only one instance observed the bad effects spoken of from the use of the naphthol. This is applied with the same preliminary measures as with the other preparations.

This young man presents himself for the first time, and we will study his case together. He states that the eruption has existed for one month; that at the time of contracting it he was a travelling salesman; that one night he was obliged to sleep with a fellow-traveller, and a few days after noticed an itching on his arms and legs. He examined himself, and finding nothing, he used some carbolic acid, as this seemed to give him relief; but after two weeks he noticed that small vesicles or pustules presented themselves, and being frightened, he comes to us. Looking in the usual sites of a scabies, we find that the eruption is mostly on the arms and legs, over the hands and wrists, and on each axilla, over the genitals and buttocks. I here mark a burrow, and to demonstrate that the diagnosis of scabies is the correct one, I take a gold needle and pass it along the burrow, and now upon the point you can see a small whitish opaque body, which I will place under a microscope and pass among you, cautioning you all to look at it well, because some day you may

be obliged to make your diagnosis this way, and now is your time to study it.

I will prescribe for this case as follows:

R. Styrax pulvis, 3i; Adipis, 3i. M.

And as he will be instructed to use the ointment as in the other cases, we will hope for a speedy cure.

If at any time you should wish to prescribe the remedies in some other way, one of the following will be beneficial.

The plan adopted by Sherwell, of New York, is to rub the whole body with dry *sulphuris* loti, after the application of a bath. This has at times given good results in my hands.

The sulphur vapor is recommended by some, and is easily made by having a heated surface, either iron or brick, the patient being wrapped in a sheet, and the dry sulphuris loti placed thereon (about two ounces of the drug). This may be repeated every day, and the patient can go about his business soon after the bath without fear of catching cold.

Of all the methods spoken of, I myself prefer that of sulphur and naphthol, as I have got far better results with it than with any of the others, and can safely recommend it as a speedy cure; more speedy than those above spoken of.

#### ON THE CONDUCT OF REST TREATMENT.

BY J. MADISON TAYLOR, A.M., M.D.,
Professor of Diseases of Children in the Philadelphia Polyclinic;
Neurologist to the Howard Hospital; Assistant Physician to
the Infirmary for Nervous Disease and the Children's
Hospital, etc.

AM frequently asked to give a distinct outline of the mode of procedures used in the treatment by rest, seclusion, and forced feeding, which has been proven to be of such large value in many otherwise unmanageable cases. Dr. Weir Mitchell, to whom is due the credit of devising and using this measure with unapproachable skill, has said all that need be said much better than I can possibly do. However, it may be of service to comply and give a simple, straightforward account of the various measures which go to make up this method of treatment, that it may be more clearly understood by those of my class who desire initiation into its supposed mysteries. Mysteries there are none. Like all other surprisingly successful measures, some element of difficulty is supposed to obtain, but such difficulties as do exist are lack of skill in using simple tools. It is true there are those who can use

this treatment best, and they are few. attempt it with much hopefulness and miserably fail. Why this should be I shall attempt to point out. The elements of failure are usually lack of exactitude in routine measures, insufficient accuracy in the amounts and degrees, times and seasons, and, above all, absence of tact in handling the individual patient. Indeed, this last is perhaps the most obvious defect of the unsuccessful in dealing with involved cases resulting from prolonged depreciation of health, and which is only eradicated by judiciously-selected and tactfully-adjusted measures. My own claim for the right to express an opinion upon this subject is due to the fact that I have had the best of teaching from Dr. Mitchell himself, as his assistant for many years, and also a fair measure of success with my own cases similarly treated.

A number of medical men here and abroad have attempted to follow out the very clear directions of Dr. Mitchell, and have signally failed; a few have succeeded extremely well. Dr. Playfair, of London, avowedly following the directions given by Dr. Mitchell, has recorded a large measure of success. In this country many use this treatment, but with very varying success. It cannot be claimed that a series of procedures will always bring about desired results, and this may only be expected when the plainly-enunciated conditions requisite to success have been observed. Dr. Mitchell distinctly states that he only uses this when all reasonable measures have been tried in vain. There are, with the many advantages, decided disadvantages here to be encountered. There are cases suitable and cases altogether unsuitable. Unless the environment be well adjusted. failure will be the rule. If one or the other essential condition is to be absent, it is difficult for one of limited experience to know which may be omitted without disastrous results. It is well known to you that in every instance of long-continued ill health there comes upon the individual, superadded to the physical disability, inevitable psychical entanglements. It is impossible for one whose body has long been ailing to retain clear judgement as to needs. Most often hysteria becomes fastened like an incubus upon such, and even in those rare instances where this difficulty is escaped, there is a long array of bad mental habits which complicate the original difficulty, not only involving the patient himself, but also all those upon whom he depends for advice and counsel. Nor does the physician in attendance always escape this growing cloud of misapprehension. One needs to have a wisdom vouchsafed rarely

to withstand the mental astigmatism which comes of watching for long months the same slowly-progressing patient. The medical man cannot be always clearly judicial in his estimate of statements of subjective phenomena. may, indeed, take the liberty of doubting the accuracy of much that is told him, but the mere adding doubt to demurrer here and there will do little to make clear the real phenomena which the patient, oftentimes unwittingly, misdescribes. As to the parent, husband, or wife, and especially where only the children of an elderly person have him in their control, i' is impossible to discount the elements of confusion which are bound to arise. The customary authority which a parent exerts, met by the habits of obedience of children or dependents. make the questioning of this authority a scarce endurable offence. In the matter of husband or wife, the vigorous one counts himself in a sense brutal if he does not accept literally much that is said to him by the sufferer; and so, one way or another, a net-work of misapprehension gradually arises, making it impossible for any one to untie the Gordian knot; hence the only real hope of success is by the process of swift severing by changing the environment utterly.

The cases, then, to which it is customary to apply these systematic measures of absolute isolation, rest, and forced feeding are those whose health has suffered so severely or for so long a time that there has come the invalid habit complicating the real disability. Much may be done, of course, by a simple change of scene and air, but there is always the necessity of proper guidance, even under changed environment, and it is a matter of frequent observation that this has been tried for months most unsuccessfully, leading finally to the necessity of more clearly-defined, and judiciously-selected measures. There are certain working axioms which obtain with almost no exception. first is that the home of one so circumstanced is never the place to get the best result. is so entirely true that it may be safely affirmed that a case of prolonged indisposition, which comes to a practical stand-still, can never be made well at home and surrounded by accustomed objects and circumstances. fact is that the nurse or care-taker should never be a relative or friend. The reasons for this are plain enough. The relationship between patient and relative is always upon some basis of emotion. It is impossible to disassociate the personal feelings and traditional conditions which sway the judgment of a familiar. Moreover, the scraps of conversation between

patient and nurse had best be on entirely new lines. Even though these partake too much of hospital twaddle, it is better than to rehash the history of ancient sufferings.

Moreover, as pointed out above, the physician himself, who has been for many months, it may be, in attendance upon a case which makes little progress one way or the other, becomes by that very act less clear and positive in his judgments and decisions.

The Special Therapeutic Measures pursued in the Treatment by Rest.-We have first the element of rest itself, which should be absolutely in bed, and on the value of which it is needless to enlarge. The rest must not only be complete, in the sense that the patient is put in bed, but he must be encouraged to become entirely restful. Unconscious tension may defeat the ends to be accomplished for a very long time. Indeed, some people, even after an extended period of lying prone, yet practically hold themselves on to the They fail to recognize the existence of four stout legs, capable of sustaining many times the body-weight. It may be necessary to dilate extensively on the need for relaxation after the manner of the Delsarte teachings, which, by the way, were formulated and in use long before Delsarte ever began his interesting crusade against over-tension. will usually take several days or a week to secure absolute rest,—a letting down of all the motor forces. But of this question I shall speak more at length anon.

Routine measures themselves have a beneficial effect, not only in that they may be so adjusted as to have inherent value, but their very monotony helps to soothe and tranquillize. The isolation should be in most instances complete, certainly at first. Freedom is thus secured from small excitations, such as new and oft-repeated impressions upon eye, ear, and brain, and the patient is relieved from constant consequent drains upon his nerve-energies. He is also in the line of relief from a tendency to over-tension.

An excess of food may now be given, and it is surprising how much can be taken, retained, and assimilated. At first it is customary to reduce the food to a scant variety and let it consist largely of milk, for several reasons. The exclusive use of milk in itself exerts a most tranquillizing effect, especially in those who are excitable and of irritable temperament, and in whom there is a large undercurrent of unrest. Often it is necessary to begin rest by the use of an exclusive milk diet for a time, gradually adding solid food by little and little as conditions progress. As a rule, however, it is need-

ful to make small change in the diet other than to reduce the habits of the individual to the simplest routine, such as an early breakfast, a mid-day dinner, and a light supper. These are supplemented by a cup of some hot drink on waking, a glass of milk or bowl of soup between breakfast and dinner, sometimes between dinner and supper, and usually some fluid food at the bed hour.

Now, "to rob the rest of its evils," come the auxiliary measures, chiefly by the mechanical agents, massage and electricity. Massage may be well done or ill done, and is always more or less useful, unless distinctly contraindicated. This provides the person lying in bed passive exercise, along with other valuable effects of which I will speak again. Indeed, a good hour's active massage is equivalent to about a five-mile walk at an easy pace, quickening circulation and metabolism, and yet, withal, putting no strain whatever upon weakened organs,—the heart and nerve-centres.

The form of electricity usually adopted is tonic faradism administered for three-quarters of an hour. Massage is put always in one-half of the day and the electricity in the other half, and each of these sufficiently far away from a meal. Generally there is some form of tonic used, either a nutrient alone, as malt extracts at meal-times, or a simple ferruginous tonic, or both. Bear in mind, the chief tonics are, in addition to the rest and other special measures employed, the mechanical spurs of the nutritive processes, massage and electricity.

Difficulties to be met.—It is often a troublesome matter to persuade a person to contemplate so long a treatment, especially when able to be up and about. In overcoming this objection it may be necessary to urge the very probable value of at least an experiment, making it clear that the rest of a week or two will be found so far from disagreeable that more may be readily endured. Then, if persuaded of its value, it may be decided to go on to the conclusion. It may be well, moreover, to clearly state that the really disagreeable period ends with the first week. When one can endure this, it is rarely difficult to continue for a longer period. Indeed, as a matter of fact, even the most restless folk, after a week or ten days in bed, will sustain a curious reversal of their original views as to its endurability and be usually willing to lie indefinitely, so great is the charm of rest when once experienced by one who sorely needs it. I have seen a tired school-teacher, who fought the idea of giving up from October until May, and who then could only afford barely four weeks of

rest, sleep twenty or more hours out of the twenty-four, merely waking for food, and falling asleep during the manipulations of bathing, massage, and the like, and who admitted that the delicious, luxurious comfort of the rest was greater than any delight she had hitherto contemplated. Indeed, the other chief difficulty is in inducing the patient to get up and stir about again when the period of rest has properly ended. This is a more troublesome matter than would ordinarily appear, and requires much art on the part of the physician to determine how soon the patient shall rise, how long a period remain up each day, and how rapidly activities shall be increased. It is customary to occupy not less than a month or six weeks in the first period of absolute rest. Less than this is of questionable avail; more than this may frequently be needful. After the absolute rest it is well to take a month or six weeks longer in getting one gradually back to more active habits. At first, sitting up for five or six minutes often gives great fatigue. More often ten minutes can be profitably occupied sitting up in an easy-chair, and this to be increased a minute or two a day for perhaps a week; then up twice a day is permissible, and longer increments of time thus occupied, five minutes being added to each until an hour is thus disposed of in the morning and another in the afternoon. In three or four weeks thus employed, the season permitting, small excursions out of doors are useful,—a brief drive of half or three-quarters of an hour; and thus little by little the outings are increased until at least once a day an extensive excursion of an hour to two hours and a half becomes a pleasure as well as a gain.

Meanwhile, during this uphill progress, much care must be exercised not to overtire the heart and muscles, long unaccustomed to work. The first fortnight of sitting up is the most difficult. The remedial Swedish movements here occupy the place of some other remedies, and by little and little the individual muscles are brought into a higher degree of efficiency, and along with these, the muscular pump of the heart and the motor apparatus generally.

Nor do the difficulties cease when once a person is able to go and come with ease and pleasure. If the absolute treatment by rest occupies three months, the three months following have need of close, tactful supervision. The amount of work to be done must be carefully estimated and provision made for needful conservation of energies at all times. If the subject be a woman, this is best occupied by sea-air or change of scene of some sort, living

quietly and systematically as before; if a man, we have usually to face the necessity for a return to work. If possible, this should be diverted; if not, careful regulations must be written for him, and he put on parole to follow as conscientiously as possible. Well is it to bear in mind that where extensive exhaustion has arisen, not only are the nutritive capacities, but also the nerve-centres, greatly enfeebled. Hence the gradations towards recovery stand thus: The disentanglement of the psychical and physical sort comes first into line. Gradually the patient learns to see as through a glass his own shortcomings,—the folly of a life which has brought about the catastrophe. Quite rapidly better digestion, assimilation, and functional sequences follow, and this results in much satisfaction and pleasure to the individual. joy of living, in short, comes back again. progress may occupy only a few weeks. comes the period of structural upbuilding, when the muscular tone improves, the round of circulation becomes systematically more wholesome, and the bodily shape is restored much as when the individual was at the best, and all this in perhaps two or three months. Here an energetic person will be prepared to think that thorough restoration has been reached, living in this secluded fashion, even though he be going out and enjoying himself abroad; so largely is the joy of living restored that he begins to regard himself as once more a part of the world's machinery. And in the case of those who have to sustain large responsibilities, a very considerable peril lurks just here. If he allows himself to be over-persuaded, by his own desires or the solicitation of friends, to attempt work, he will quickly find his capacity for endurance pitiably small. Just as in the training of an athlete, systematic measures first bring about a good condition, so far as the symmetrical workings of the various organs are concerned, but a long time is needed to gain that ever-to-be-desired quality, staying power. So here months are needed instead of weeks to produce the best results. In proportion to the degree of exhaustion which existed when this treatment was begun, a period of not less than from six months to two years is required to bring the individual back to his full working power. The watchful eye of a thoroughlytrained physician is necessary, moreover, to iudge. I have under my observation even now an admirable illustrative instance of all this. A highly-intelligent lawyer of New York came to me eight months or more ago, knowing so much of this whole matter that he allowed his own judgment to be put against mine. Twice

since I saw him has he attempted to go back to work before I judged him fit, and only a few days ago word came to me that he again must leave and take that rest, of probably not less than a year, which was pronounced needful for him after all the measures have been instituted to bring about nutritive repair.

When organic disorders underlie the exhausted states, a greater insistence must be placed upon this delay. Disorders of the kidney, however, may get unexpectedly well during this régime. Incipient diseases of vital organs known to menace are ofttimes checked. Especially true is this of mental deteriorations and cord-troubles. Locomotor ataxia has been notably improved, and acutely-painful states, as sciatica, entirely cured thereby.

Outline of Daily Routine.—The best results are had from modelling the day much after that of an ordinary working person. should begin early in the morning. The patient usually needs to be aroused by about seven o'clock, or even earlier in summer weather. With the first peep of dawn the nurse should bring a cup of some hot drink to the bedside and administer it. A small cup of cocoa is in some ways the best, or it may be hot milk or weak coffee or tea. The cocoa is useful for those who need to be especially fattened; the tea perhaps better for those who are already burdened with soft flesh. The hot drink acts both as a food, enabling the patient to bear the fatigues of the subsequent bathing and partial dressing, and also the heat acts as an admirable stimulant. Indeed, a cup of hot water in the morning is a far more competent eye-opener than any combination of alcohol. This I have proven beyond peradventure time and again in the case of men accustomed to take much tipple, and who yet became more enamoured of a cup of hot water, with possibly a slice of lemon in it, than any combination emanating from a bar. After the cup of hot fluid, the nurse administers a bath. This is best as cool as possible; to those who can endure it, it should be cold. It also is the better for containing some stimulating property, as salt; a tablespoonful of salt in a basinful of water, to be conveniently ready, is then employed by the nurse, the patient lying between blankets to prevent all chill. The nurse takes one limb at a time, bathes it gently, and afterwards rubs the skin to a good pink glow. As each part is disposed of it is carefully protected by the blanket and the next approached. occupies probably half an hour. Then a little rearrangement of the clothing is had and the subject made comfortable for the day. About

eight o'clock comes an ample breakfast, which will be found in no way interfered with by the small cup of hot drink earlier. After the breakfast a period of rest is had, while the nurse attends to duties elsewhere, and the patient is not allowed to be disturbed in any way. The next meal is a little after mid-day, about one o'clock, which takes the shape of a liberal dinner. At six again comes the last meal, a fairly-substantial supper. After each meal a period of an hour should elapse in which the patient is not to be in any way disturbed. Between breakfast and dinner, about half-past ten, fluid food is again given,-milk, broth, or soup. In some cases this is repeated between dinner and supper, and at nine o'clock, or before the final tucking in for the night takes place, it is customary to give again a glass of milk, preferably warmed. The massage should come either in the morning, just before the milk, or in the afternoon, midway between the meals; the electricity in the half of the day not occupied by the massage, either forenoon or afternoon. On going to bed at night there is frequently given a dry rub to the skin with a coarse towel, or if salt is not used in the water in the morning bath, with what is called a salt This consists of a plain crash cloth dipped in a strong salt solution and hung up to dry, and makes a very stimulating application to a flabby skin. Massage is best used in the morning, and is usually followed by the glass of milk already described, the patient again lying entirely quiet for an hour. Electricity is best given in the afternoon, and need not be followed by anything except a little pleasant conversation, perhaps. Indeed, the hour for the physician's visit is best during the latter half of the day, when, the occupations being somewhat less systematic and the diurnal ebb and flow of vital forces being at their lowest, the patient becomes most lonesome, the thoughts dwelling upon home and other emotional matters, so that the visit of the physician is welcomed in turning aside these discomforting The electricity, indeed, is best adthoughts. ministered by a physician, and, properly done, need not occupy above half an hour, making a very agreeable break for the patient. To be sure, this may be used by a young physician trained for the purpose, or, in some instances, by the nurse, but it is of distinct value oftentimes to have a variety in personalities, even in these routine measures.

The daily evacuations should be sedulously regulated. It is well to follow the habits of the individual as to the time of the bowel movement, but if this can be put in the after-

noon, it is sometimes better. However, a full daily evacuation of the bowels should take place at some regular time, and the will of the individual trained to bring this inevitably to pass. Not the least of value in this whole matter is establishment of a thorough systematic habit of body and mind. At first there should be entire dependence of the patient upon the attendants; later, as active measures are instituted, the patient is to be taught and urged to direct his own volition in accomplishing the various measures which he must soon or late depend upon himself to continue. The urine must be looked to, the quality and quantity of this carefully noted, and fixed times are very useful also for this.

The temperature should be taken regularly twice daily to observe the fluctuations and tendencies. It will often be found about 100° F. for two or three days, then drop to subnormal for a few more, and finally become and remain normal.

Diet.—An ordinary, liberal, wholesome diet list is, as a rule, not especially limited in any direction. If there be manifest digestive difficulties, these are met by such measures as may be plainly indicated. Where marked loss of digestive tone exists, it may be necessary to begin with peptonized milk every two hours, rapidly adding to this both in amount and also by various semi-solid and solid articles. If the patient be profoundly anæmic, as often happens, and this may be definitely determined by a counting of the blood-corpuscles, forced feeding, by which is meant urging food upon the stomach, is early instituted. Where the patient is exceedingly feeble, the nurse is directed to feed him with her own hand, taking up the food bit by bit and handing it to the patient on a fork; also inducing him to drink the necessary amount of fluid food to the last drop. Many times a person is indisposed to eat from sheer fatigue in handling a fork. This may seem doubtful, but is nevertheless frequently demonstrated. A person who has for months or years eaten even as the birds eat, or are supposed to eat, little or nothing, can thus be induced in a very short time to take such an enormous quantity of food that no one is more surprised thereat than himself. Not only so, but folk whose digestive capacity has been considered the most diminutive can soon swallow and assimilate astonishing quantities of provender. Milk should always be used as a faithful ally. Of course a large number of people have come to believe that they cannot take this very important article of diet without distress. Like most other self-deceptions, this is usually provable to be a myth. Of the one person out of five who declares he cannot take milk, it is fair to assume that only one in thirty or forty can really not do so. This milk should be given-sound, wholesome cow's milk-in its full strength. Many times it may be necessary to reduce this by skimming or by dilution. Sterilization, as is perfectly well known, enormously impairs the nutritive value of milk. The reaction against this fad has happily set about. Very rarely is it impossible to secure thoroughly good milk, and it should come, as fresh as possible, of course, and prepared rightly at the dairy, straight to the patient twice a The dairyman is not so dishonest a fellow, by a long shot, as he has come to be thought. Milk should be chilled to not less than sixty degrees immediately it comes from the cow; thus are the objectionable gases eliminated from it, and other changes wrought, too many to mention, which render it fit for human food. The containers of this milk should always be absolutely clean and alkalinized. It should, moreover, be sedulously guarded from contact with offensive matters. which pollute it, be these of a solid or volatile nature.

A considerable proportion of those for whom rest treatment is needed are fat, anæmic women. In the management of these cases much trouble inevitably arises. For them it has been found best to use a skimmed-milk diet, somewhat after the manner of Karell, of St. Petersburg. This, in brief, consists of specified amounts of milk, say about four ounces every two hours, and nothing else except water allowed. hunger grows very distressing, this may be rapidly increased half an ounce at a time each day until eight ounces are taken every two hours, then ten or twelve ounces every three hours, and finally, in a short time, small amounts of meats, fowl, oysters, etc., with a little toasted bread, a few stewed prunes, etc., until the diet is gradually increased and suffi-Upon this diet the valueless fat very soon begins to melt away, and in a few months' time, along with powerful massage, sometimes given twice or even three times a day, the whole contour of the individual is changed, not only architecturally, but mentally, and the peculiar, peevish whining of such women is most agreeably modified. Thus, in two or three months they can be literally made over upon a very much improved plan. Peptonization is at times employed for milk, where the difficulties of digestion are really considerable, and this, to my mind, is best done by what is known as the cold process. About 3 grains

of pancreatic extract and 5 grains of bicarbonate of sodium, in a powder, are put into a glass and rubbed thoroughly with about a tablespoonful of milk. To this is added the rest of a glass, the whole agitated in what is known as a shaker, or tin cup placed over the top of the glass, and administered immediately. Not only is the milk thus rendered free from latent acidity, but agreeable by the mechanical addition of the air giving it a lively, bubbling quality. Of course any addition of alcohol to this preparation kills the digestive ferment. Ordinarily peptonization is not necessary. In extreme cases the peptonization should be carried on by subsequent warming for twenty minutes or half an hour, but this gives the milk a disagreeable taste which is very offensive to most persons. Soups are used largely, too, as an auxiliary food, -good broths, especially chicken and oyster broth. Clam broth is a charming addition to the dietary when procurable, and if the patient's appetite is amply good, more especially in the second or third week, may be substituted with advantage for the milk between meals or at night. As to the articles which constitute the regular meals little need be said, except that they should be well prepared, of course, and free from objectionable qualities. It is a matter of common experience that a notable dyspeptic will, in a few weeks of this treatment, comfortably take a breakfast consisting of what are supposed to be very indigestible substances, such as buckwheat cakes and sausage, with perfect impunity, or even that monumental rock on which so many split, Boston baked beans. A lady said to me on one occasion, "They gave me beans for breakfast, great fat beans, with brown coats on them,regular rubber overcoats. I ate them because you said I should take anything brought to me, and to my unspeakable astonishment they did not do a particle of harm."

There are many details as to this matter of diet of which it might be interesting to speak, but in trying to confine myself to the essential matters only, little more need be said. The habit of eating slowly is given an admirable opportunity of establishment,—a precious possession. If the act of feeding be tiresome or the patient show signs of slighting this function, the nurse is instructed to feed urgently, almost forcibly, always with kindly tact and cajolery. Thus twice as much is often disposed of, and without any subsequent discomfort.

Where fattening is desired much butter is used, always the best, spread as liberally as possible on the bread or toast.

Medicines.—One of the chief advantages of this plan of treatment is the absence of drugging and the dependence upon the rational tonics of rest, system, food, passive exercise, and freedom from artificial stimuli and other forcing agents. It is important to keep the bowels active, so that assimilation may be encouraged. The medicines most important are those which aid digestion,—that is, the nutritive tonics, as malt, which does more than aid in the digestion of starches, and seems to exert some curious effect beyond this function. form of malt may be the fluid extracts, which are usually little more than a bitter, slightly alcoholic stimulant, with small diastatic power. Some of the preparations of this upon the market are utterly valueless; those that seem to be useful very often soon deteriorate as they become popular. For my own part, I rely largely, when needing this particular form of tonic, upon the reliable Guinness's stout, which is a little high in alcoholic strength, but far more agreeable to the taste. The Bass Company makes a very good malt, and there are a great many excellent American malts and a very much larger number of worthless ones. The sugary extracts are much alike, and sometimes do better than the fluid preparations, especially where it is convenient to combine these with cod-liver oil, or the digestive ferments, such as pancreatine. These are best administered with the meal. At times the Guinness's stout is a very valuable aid to appetite, taken just before eating. Cod-liver oil is generally needed, and can be given in many ways, but perhaps the best is a freshly-made emulsion by a reliable Capsules are very convenient for chemist. those who are much distressed by the taste. Iron is the great sheet-anchor. Dr. Mitchell usually prefers the lactate, given in large doses, increasing from a small one until very large amounts are taken. To those with whom iron mentally disagrees the pyrophosphate, or some such tasteless preparation, is given in the malt. As the patient begins to be more active the lactate of iron in pill with strychnine is used. . For obstinately slow bowels a little bit of aloes may be added to the pill, to slowly stimulate. Sometimes it is important to help sleep in those who have been much disturbed in their rest, and for this the simpler hypnotics, such as sulphonal, the efficient but disagreeable-tasting paraldehyde, or the bromides, are efficacious. When one's tranquillity is secured all such are promptly withdrawn. The mere habit of sleeping very often becomes improved by the other measures employed, and artificial aids are rarely needed long.

Massage.—As I said above, this may be only moderately well done, and yet of great value. Massage is being pretty widely understood and employed now in this country, and is no longer a novelty; but, curiously enough, it is overunderstood,—that is, a large number of very intelligent people have got the notion that massage is a name for a comprehensive series of measures, whereas it is simply a mechanical tonic in the form of passive exercise. It would be impossible to give any complete account of this here, but a few remarks may be of use as to the kind of massage which Dr. Mitchell chiefly prefers. The Swedes, who deserve the credit of reducing this to a scientific measure, yet err in using too much pinching. well done by extremely-skilful manipulators, this is not especially offensive, but rarely agreeable. In the half-taught the pinching becomes a painful or disagreeable process. In America we try to adapt the better points found in all systems and reduce them to a simple working plan, and the form of massage taught at our Orthopædic Hospital is, to my mind, much the best. We have already a large number of graduates working in different parts of the country who are capable themselves of demonstrating the simple and efficacious method there employed. This consists, in brief, of holding the patient in a position most comfortable, and seizing the muscle masses with so large a grasp that considerable areas are pressed upon and kneaded at once. The pressure then exerted may be very considerable, but not painful, the chief point being to make the upper tissues rub the lower ones, and all so judiciously and firmly that not only a considerable cell-activity is elicited, but a secondary feeling of comfort should result. After the part has been sufficiently manipulated, it must be instantly covered to prevent surface-chill, then the next part acted upon and it promptly covered, and so on until the whole body is disposed of, when should follow a period of not less than an hour of repose. When given in the forenoon, fluid food is administered directly afterwards. Rarely is this used after supper, and only in the case of full convalescence. The séance should occupy the better part of a half-day.

For the convalescent, also, the massage is gradually replaced by systematic Swedish remedial movements to more fully strengthen the muscles.

Electricity.—The form of electricity used is tonic faradism with a slow interrupter, causing a full contraction between the poles, held four or five inches apart and applied over the larger

muscle masses and, unless contraindicated, over the abdominal viscera, seeking to secure as ample a muscle-contraction as may be between these points without causing pain. the beginning of the treatment the arms and legs only are done, then the rapid interrupter is used, applied to the neck and one heel for five minutes, and then for five minutes to the other heel. In a day or two the limbs are more fully treated with a slightly-increasing force of current, ending with the rapid interrupter, as before, also increased. Then, in a few days, the whole of the body, leaving out the head and hands, receives increasing musclestimulus, taking in the trunk pretty thoroughly, and, where there has been weakness of the back, spending a good deal of time on it. Rapidly done, this need occupy no more than forty minutes, and very soon the strength of the current may be considerably increased, and that without offending the patient at all.

This is an extremely useful means of systematically bringing out the activity of the muscles, in ways, too, that massage does not reach. It is chiefly a tonic to the muscular contractility, exerting, however, some little effect upon the circulation; but its chief value is to bring out the activity of the muscle-fibres, which may have for a long time been almost entirely disused. The rapid interrupter applied to neck and heels has a general effect upon cell-activity from pole to pole.

The Nurse.—I shall end this brief summary by some remarks upon the most important agent in its success, next to the physician himself,—namely, the nurse. It is almost impossible to get any sort of good result except with a thoroughly-competent nurse. Many times have I failed utterly in making shift with some one whose capacity as an amateur nurse had been amply demonstrated in acute illness. amateur nurse will do here. Not only so, but to attempt rest treatment with the assistance of an old-fashioned Mrs. Gamp, or with a relative or friend, no matter how intelligent and angelically-tempered they may be, is almost certain to end in miserable failure. Nurses for such cases as this need to be of the very best. first essential quality is tact; the second is firmness and always full knowledge of the craft.

I could dilate upon this interesting theme overmuch, but would, perhaps, only weary you. Of course the nurse must be skilful and thoroughly trained in hospital work, and must possess the highest qualities of heart and head of which she is capable. This shutting up of a person with a single nurse is, in some senses, worse than matrimony, and the peculiarities of

both patient and nurse must be carefully considered and adjusted by the physician. Much the larger number of cases requiring rest treatment are, of course, women; but where men are the patients it is usually best to have a woman nurse. The massage is given by a man, of course. There are very few good men nurses to be had, and perhaps it is just as well not. I firmly believe that a woman can control a sick man better than a man can, at least in the capacity of nurse. In most of the hospitals abroad men nurses are banished and only women used. Then, again, the class of men who will take up nursing is, as a rule, very unlovely. We all know of a few admirable exceptions to this, and some of the best men nurses I ever saw were colored or mulatto men. I had occasion to select a nurse for a patient who was himself a surgeon in the navy. When I asked him whether he would prefer a man or a woman, he promptly answered, "A woman, by all means; men nurses always smell either of hair-oil or whiskey;" and this is pretty much the case. There are men who need a male attendant for special and particular reasons, and it is very difficult to get the right man, I assure you. But woman's special vocation is to nurse, and if she has had the right kind of training, both morally and technically, it produces an exceedingly fine result, and it is my pleasure to testify in behalf of not a few splendid women who have taken up this career and who adorn it exceedingly, although their rewards, except in their own consciousness, are

### THE TREATMENT OF GRAVES'S DISEASE.

THOMSON (New York Medical Journal, June 3, 1893), after discussing the treatment of Graves's disease, gives the following summary of his therapeutic measures.

His treatment of Graves's disease is mainly based upon its supposed relation to digestive In the first place, he believes that disorders. a meat diet is to be as much restricted in these patients as a starchy diet in diabetics. undiluted milk also is not to be allowed, from its indigestibility with most healthy adults. is a significant fact that races like the Tartars, the Bedouins, and the Guachos of South America, who have to live upon milk, have all found by experience that it has to be fermented before it can become a staple, and, as with them, about their only daily diet. All the world over, the ferment for this purpose is the same,-namely, the yeast plant. With fresh, good milk fermented every day, as it is by the Arabs and the peoples of Western Asia, and now sold here pretty extensively under the Turkish name of matzoon, Thomson states that he has relieved more cases of vomiting from organic diseases of the stomach than by any one article. In Graves's disease it has, in his experience, proved especially beneficial.

Medicinally it is well to begin treatment by a mercurial purgative, as the ordinary blue pill, to be repeated occasionally from time to time. In some patients this will be found particularly useful against the diarrhœa. Then, three or four times a day, he prescribes in capsule 5 grains of equal parts of bismuth subcarbonate and powdered calumba, with 4 grains of salol and 5 of benzoate of sodium; or capsules of 10 grains of bismuth salicylate with 2 of betanaphthol and 2 of ichthyol. The best time for these intestinal antiseptics to be taken is an hour after meals.

As a vaso-motor tonic, he relies chiefly on 10-drop doses of tincture of strophanthus half an hour before meals.

## A CONTRIBUTION TO THE STUDY OF SYMPATHETIC OPHTHALMIA.

LOGETCHNIKOFF (Wiestnik Oftalmologii, January and February, 1893; abstracted in Annales d' Oculistique, April, 1893) observed a sympathetic serous iritis in a woman who had received two months before, a large traumatism of the right eye (wound in the sclerotic, rupture of the iris, with prolapse of the crystalline lens, ciliary body, and vitreous). Neither the right nor the left eye exhibited change, either in the optic nerve or in the retina. The sympathetic ophthalmitis at first progressed, then remained in statu quo, and finally disappeared without The wound in the right eye leaving a trace. healed well. This satisfactory result was obtained by means of relatively indifferent therapeutics, -atropine, antiseptic dressing, subcutaneous injections of pilocarpine. The duration of the treatment was six months and a half. This case, which is not an exception, leads Logetchnikoff to doubt the brilliant results obtained by Abadie in the treatment of sympathetic ophthalmitis by intraocular injections of corrosive sublimate. He likewise objects to cauterization of the wound with a thermo- or galvanocautery, which aids in the production of vicious scars. In a general way he is not an advocate of the theory of Deutschmann, or of any therapeutic measure based upon this hypothesis.

## The Therapeutic Gazette

H. A. HARE, M.D., GENERAL THERAPEUTICS.

With special departments under the charge of G. E. DE SCHWEINITZ, M.D., OPHTHALMIC AND AURAL THERAPEUTICS,

EDWARD MARTIN, M.D.,
SURGICAL AND GENITO-URINARY THERAPEUTICS.

#### GEO. S. DAVIS.

Medical Publisher, Box 470,
DETROIT, MICH.

Philadelphia, 714 Filbert Street,

### SUBSCRIPTION RATES FOR 1893.

THERAPEUTIC GAZETTE (postage included).....\$2.00 THERAPEUTIC GAZETTE with MEDICAL AGE...... 2.50 THERAPEUTIC GAZETTE with WESTERN MEDICAL

REPORTER...... 2.50
THERAPEUTIC GAZETTE with BULLETIN OF PHAR-

MACY...... 2.50

THERAPEUTIC GAZETTE with AMERICAN LANCET 3.25 THERAPEUTIC GAZETTE with AGE and LANCET... 4.00

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136 Gower Street, London. Price 108. Remittances may be made either by Postal Order or Stamps.

Price to Foreign Subscribers direct (postage included), \$2.50 (ro shillings). English postage-stamps received on remittances.

Editorial communications should be addressed 222 South Fifteenth Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

Authors will receive reprints in pamphlet form, without charge, provided the request for them be written on the articles sent.

Business communications should be addressed to the Publishers.

### Leading Articles.

THE TREATMENT OF CHLOROSIS BY IRON AND OTHER DRUGS.

LSEWHERE in the Department of Progress in this number of the THERAPEUTIC GAZETTE we publish an exceedingly interesting article by Dr. Ralph Stockman, of Edinburgh, upon the "Treatment of Chlorosis by Iron." This subject has been so much disputed during the last few years that any contribution looking towards the solution of our doubts as to the action of iron under these circumstances is of value. Some of the points which are noted by Dr. Stockman are quoted in the address in Medicine which was published in the last number of the GAZETTE, but there are a number of others which we deem worthy of attention which we could not consider in that article.

In the first place, it will be noted that in all

of the experiments of Dr. Stockman in which iron was used there was a very extraordinary increase in the quantity of hæmoglobin in addition to the increase which took place in the number of the corpuscles, and that the percentage of increase in hæmoglobin was far greater than the increase in corpuscles.

On the other hand, it will be seen that more experiments are needed than those given before the results obtained can be considered as conclusive, for it will be noticed that in all the experiments the length of time was so short that it is hardly credible that such an increase in corpuscles and hæmoglobin could have occurred. Particularly is this true of Experiment 9, which was made with bismuth and iron, in which it will be seen that the administration of 5 grains of iron thrice daily raised the number of corpuscles over one million in sixteen days, and again, in Experiment 10, it will be seen that an increase of one million took place in so short a space of time as four days under the influence of 3 grains of iron thrice daily. In Experiment 11, the statement that no improvement took place while the patient was under arsenic, but was marked under iron, is hardly correct. It is true that there was no increase in the quality or quantity of the blood under the arsenic, but the brief space of eleven days is hardly sufficient time to permit of the dogmatic statement that iron was responsible for the comparatively small increase which took place. Again, in Experiment 12 it will be noted that under the influence of ferrum redactum the corpuscles increased in five days, from October 30 to November 4, nearly eight hundred thousand, and that they dropped back in five days more than four hundred thousand. In Experiment 13 it will be seen that the use of iron in five days is supposed to have raised the corpuscles from two million nine hundred thousand to three million one hundred thousand, although four days before the iron was given the corpuscles numbered three million one hundred and twenty thousand.

We have drawn attention to these points not because we do not admire the research of Dr. Stockman, but because we believe that his experiments must be carried out further before we can receive his studies as conclusive. A certain amount of experimental work in studying the influence of drugs upon the blood has shown us that only prolonged and frequent examination of this fluid, governed by every control experiment possible, can prevent us from making serious errors. Particularly is this the case when it leads to the enunciation of so positive an assertion as that arsenic does

no good in chlorosis, either in increasing the number of red blood-corpuscles or quantity of hæmoglobin contained in them.

Practical physicians are almost a unit in the belief that arsenic does increase the number of the corpuscles, and that iron is a remedy which should be used to increase the quantity of hæmoglobin.

While it is true that arsenic did not increase the corpuscles to any extent in the experiments of Dr. Stockman, it is of interest to note that the iron in all cases produced a far greater increase in hæmoglobin than it did in corpuscular elements. This is particularly the case in No. 18, where the hæmoglobin was increased in thirteen days from thirty-five to seventy per cent., and again in Case 19, where the hæmoglobin was increased from forty to eighty-two per cent. in a little over five weeks.

## THE VALUE OF VASO-MOTOR DILATORS IN CONDITIONS OF CARDIAC FAILURE.

IN the last number of the THERAPEUTIC GAZETTE we published a leading article upon the use of stimulants in cases of cardiac failure, and insisted upon the employment of vaso-motor stimulants if good results were to be obtained from drugs administered for the purpose of increasing the activity of the heartmuscle. It must not be thought from this recent article that we do not value a class of remedies which are capable of proving themselves very useful at certain times in the treatment of circulatory disturbances. Chief among these are the nitrites, which have been used, as is well known, by many eminent practitioners for the purpose of removing symptoms of cardiac failure in various diseases, and more particularly in pneumonia. It is claimed by those who have used them most that the relaxation of the blood-paths, which is caused by the employment of nitro-glycerin, takes away the resistance which, combined with cardiac weakness, is rapidly overcoming the power of the heart. It is also asserted that this dilatation of the peripheral blood-vessels through the use of the vaso-motor depressant enables the cardiac ventricles to rid themselves of the blood which, by rapidly accumulating, produces paralytic distention. While we do not believe that the employment of this class of circulatory depressants is as frequently indicated as is the employment of cardiac stimulants associated with vaso-motor excitants, there are certainly instances in which their employment is of value. These cases are usually found in those who are suffering from increased arterial tension due to renal disease, or who, in rapid pneumonia, have vaso-motor spasm as a result of interference with respiration and the accumulation of carbonic acid in the blood, which, as is well known, is a powerful stimulant to the vaso-motor centre.

In the employment of the nitrites as vasomotor depressants in cases of cardiac failure, it should always be remembered that their dominant action is not only depressant to the vasomotor system, but ultimately powerfully depressant to the heart itself. Their use is, therefore, limited to the producing of temporary vaso-motor depression, as they cannot be used for any length of time without endangering the integrity of the heart-muscle. Thus, in cases of continued inhalation of nitrite of amyl. it is conducive of nothing save disastrous result; whereas its employment for a moment, or the hypodermic injection of nitro-glycerin in a single dose, may, by its instantaneous relaxation of the peripheral blood-vessels, enable the heart to give those few beats which will empty its cavities and permit it to return to the performance of its customary duties. In the presence of sudden cyanosis, cardiac embarrassment, dyspnœa in the course of a fever, or pneumonia, the nitrites may prove invaluable; but, as we have just said, their employment should be temporary and not continuous.

### PHLYCTENULAR KERATO-CONJUNCTIVI-TIS AND ITS TREATMENT.

A T the recent meeting of the Section of Ophthalmology of the American Medical Association, the subject of phlyctenular ophthalmia and its treatment was introduced by Dr. Dudley Reynolds, of Louisville, Ky., who contended that in the majority of cases of this affection local remedies were of minor importance, as the disease was the expression of malnutrition, and that the measures directed towards its relief should consist chiefly of proper diet and hygiene; in short, of all measures which tend to improve the constitution of the patient.

Considerable discussion was elicited by Dr. Reynolds's paper, although the subject is a well-worn one and the disease of such common occurrence. It at once became evident that while all were in accord that constitutional measures and due attention to hygiene and diet should be strictly enforced, few were willing to agree with Dr. Reynolds that local

measures should be relegated to the back-ground.

One of the difficulties in laving down hardand-fast rules for the treatment of phlyctenular ophthalmia, or, more properly, phlyctenular kerato-conjunctivitis, is the difficulty which always attends the formulation of therapeutic laws for a disease which manifests itself under a variety of types, just as it is brought into existence by a variety of causes. When the phlyctenulæ, always probably of conjunctival origin, confine themselves to this membrane. there is little cause for apprehension, and simple remedies, both local and general, suffice to bring about a cure, no matter whether the manifestations are multiple or solitary. When, however, extension to the cornea takes place, and when several of the etiological factors presently to be mentioned are active, the disease is serious, and phlyctenular keratitis may become one of the most stubborn of corneal affections.

Independently of the conjunctival forms, which are especially apt to follow in the wake of measles and other exanthemata, and may attack children ordinarily of fair constitution. the various corneal types of the affection are certainly most frequently seen in strumous subjects, particularly if to the influence of struma there are added unfavorable hygienic surroundings, improper and insufficient food, or indiscretions in diet. Under these circumstances removal of the city child to the pure air of the country, rigid exclusion of tea, coffee, sweetmeats, and all other improper articles of diet, together with the administration of alterative tonics,-iron, quinine, arsenic, phosphates, etc.. -in large measure fulfil the therapeutic indications. We cannot believe, however, that they are sufficient, and enter a plea for local treatment as well. With the corneal disease. especially if the phlyctenule has broken down and formed an ulcer, there is almost invariably hyperæmia of the iris, and much is gained by dilating the pupil fully with atropine and maintaining the mydriasis so long as the signs of irritation remain. Subsequently the orthodox treatment with yellow oxide or calomel may be instituted. In case the phlyctenular ulceration assumes a tendency to spread or penetrate the corneal layers, then vigorous applications to check the disease are as evidently needed as they are in any other type of ulcerated keratitis with this disposition.

Too often, with this disease, a sort of routine practice is followed, and tonics are poured into the child without due preparation. Nearly always the alimentary canal is more or

less disordered, and certainly this should be prepared for the reception and better absorption of the drugs which are supposed to build up the failing nutrition.

But even this is not sufficient. The tendency of the disease is to relapse. We are wont to say that it is under the influence of moist and warm weather, as well as of the circumstances which have been detailed, but we are not always so ready to acknowledge the influence of a factor that is quite as potent as either of these,namely, the almost invariable association of inflammatory and obstructive diseases of the nasal passages, which, as it seems to us, in many instances constitute the direct cause of the disorder. Catarrhal rhinitis, tumefied turbinals, and particularly adenoid vegetations are so constantly present that they must be regarded as more than a mere coincidence or association, especially as their removal, in the majority of cases, is followed by almost immediate relief. This point has been insisted upon many times, and yet it is surprising that in many standard works there is complete silence in regard to the relation between phlyctenular kerato-conjunctivitis and nasal disease.

It is a fact worthy of mention that in many instances, as Martin declared a number of years ago, there seems to be a relation between keratitis of this type and astigmatism, —that is to say, children, other things being equal, appear to be attacked about the time that their habits of life are such that they begin to feel the strain occasioned by an astigmatic cornea. No doubt in these cases there is a predisposition to the disease, and the relation is somewhat similar to that which ametropia bears to blepharitis; but none the less it is another one of the many reasons for an early investigation of the refraction of the human eye, and one of the many justifications for an early correction of refractive anomalies. tainly after an attack of phlyctenular keratitis has passed away, provided the child is of suitable age, astigmatism should be neutralized with suitable lenses.

The evident conclusion of the matter is that phlyctenular kerato-conjunctivitis, inasmuch as it may be an exceedingly stubborn affection, and may leave corneal scars which materially interfere with the vision and the future usefulness of the subject, demands both local and constitutional treatment; that everything which tends to remove malnutrition is indicated; that the lachrymal passages, the teeth, and the nasal chambers should be examined; in brief, to borrow an expression from Harrison Allen, that the entire cephalic mucous membrane

should be explored and anomalous conditions corrected; that the lesions in the eyes themselves require local treatment, soothing, stimulating, or resolvent, according to the stage of the disease; and, finally, that the relationship of ametropia should not be forgotten.

THE USE OF ORGANIC LIQUIDS EX-TRACTED FROM GLANDS AND OTHER ORGANS.

PROWN-SEQUARD, who more than twenty years ago enunciated as a general principle that all glands, whether they have excretory ducts or not, give to the blood by an internal secretion principles which are of great importance, if not necessary, has since proved, at least to his own satisfaction, that not only glands, but all tissues have, besides their influence on blood resulting from an interchange of nutrition, an internal secretion. This general truth is the foundation for his new therapeutic system.

In the British Medical Journal, there is a brief but very thorough résumé of the practical application of this principle. After describing the fluid used under these circumstances, the modes of introduction of the various organic liquid extracts are briefly discussed.

In addition to the thyroid gland, the thymus and the medulla of bone are said to have a therapeutic action like the thyroid after having been swallowed. This is not so, however, for the sexual glands or for the pancreas. Condensed liquid extract of these two glands may, however, be injected into the rectum with a beneficial effect almost as marked as would follow an injection of a smaller amount beneath the The ordinary way of using these organic extracts is to drive them beneath the skin or into the blood. When the experimenter injects these liquids into the lungs, through the laryngeal glottis, the absorption is almost immediate; there is no pain and no coughing, or trouble of any kind. This, Brown-Séquard states, is the safest way of injecting two, four, six, or eight drachms of organic liquid which are to be introduced into the blood, provided the medical man is sufficiently adroit for this delicate operation.

The mode of preparation of the liquid organic extracts is exceedingly important. This has been perfected by D'Arsonval. It is applicable to all the organic extracts. Taking, for example, the testicular extract, that which has been most widely advertised, most highly extolled,

and most bitterly condemned, the method of preparation is as follows: Immediately after bulls are slaughtered a tight ligature is placed high up on the whole mass of the spermatic cord, thus retaining some blood in the veins; the testicles are removed, the coverings are cut away with sterilized scissors, the organs are then washed in dilute bichloride solution, afterwards in boiled water. Each testicle is then cut in four or five slices and, with the cord, is placed in glycerin, a litre to the kilogramme of testicle. In twenty-four hours a litre of freshlyboiled water containing ten to twenty-five grammes of pure chloride of sodium is added. This mixture is passed through filter-paper which has been previously sterilized with boiling water. The filtration will be more rapid if the glycerin is heated to about 104° F. A final sterilizing filtration through a D'Arsonval filter is practised, and the liquid is then ready for use. For a description of the method of preparing the organic extracts those of the various organs are taken up in turn and their physiological and therapeutic actions are pointed out.

Thus, injections of renal liquid in organic affections of the kidneys are supported on theoretical rather than practical grounds, and liquid extract of pancreas is suggested for the cure of diabetes, and hepatic liquid extract is suggested as a means of improving the condition of the patient suffering from advanced disease of the liver. Leaving out of consideration the various extracts which this eminent scientist prepares, and the administration of which he advocates in diseased conditions of the organs from which the extracts are derived, the theory upon which this system of therapeutics is based would seem to be the creation of a diseased imagination, were it not for the very positive clinical evidence afforded by at least one of these extracts,—that is, the active principle derived from the thyroid gland. This has been shown beyond all cavil to be curative in cases of myxcedema; and though this fact by no means forces us to the acceptation of the truth of Brown-Séquard's theory, it at least entitles the latter to careful consideration, and, under some restrictions, to practical tests.

Apparently, the testicular extract has been given a thorough clinical trial, and its failure is in striking contrast to the brilliant results obtained by the injection of thyroid extract. There have been a few reports of cures from injection of testicular juice.

Brown-Séquard has himself perhaps contributed the most striking cases. Others, and almost without exception those whose scientific reputations are by no means on a plane with that of Brown-Séquard, have reported astonishing results. Wherever the method has received careful scientific study it has been found wanting.

Bardet (Journal de Méd. de Paris, No. 22, vol. v.), a therapeutic expert, has again gone carefully over the ground. His results were good only in that class of invalids who are always temporarily benefited by any new method; indeed, he implies that the testicular juice was practically as inert as so much water, and when the patient was kept ignorant as to which was injected, the water was followed by equally gratifying results.

Bardet draws a rosy picture of the coming day when all symptoms will be instantly cured by injection. He paints the exhausted neurotic sinking into the tranquil slumber of bounding health after transfusion of brain extract; the diabetic again becoming stout and lusty under subcutaneous administrations of pancreatic extract; the weak and debilitated bounding from excess of energy after the application of the active principle derived from macerated muscles; and, finally, the feeble old man regaining in a moment the spirit and powers of youth. This he characterizes as a beautiful dream, but so opposed to the recognized laws of dynamics and etiology that its realization can never be.

It is, perhaps, unfortunate, so far as a trial of his extract is concerned, that Brown-Sequard has made such extravagant claims for its therapeutic efficacy. He has seen testicular juice cure cancer of the stomach, leprosy, ataxia, and a long list of disorders as varied in their nature as they are hopelessly beyond the reach of medication.

It is a tribute to this distinguished scientist's high standing and to the good faith with which he advances his chimerical theories, that the French scientists not only refrain from that ridicule at which they are especially apt, but even subject the methods to careful scientific investigation.

The general principle is one upon which a school of medicine could readily be founded, and one having far more to support it than Hahnemann's dogma of similia similibus.

### TREATMENT AFTER NEPHRECTOMY.

PICQUE (La Médecine Moderne, 4 année, No. 42) states that after nephrectomy the ureter should be treated precisely as the pedicle of an ovarian cyst after ovariotomy.

Monod states that drainage should not be suppressed altogether, especially when there has been pus in the kidney or in the pelvis.

Terrier agrees in this opinion.

Picque is content to carefully cauterize the pedicle as is done in cases of salpingitis.

This, Terrier holds, would only be safe in cases of tubercular pyonephrosis. If the ordinary septic microbes are present, such a proceeding would be extremely dangerous.

Reynier holds that ligation of the septic ureter does not secure immunity against infection of the womb, though cauterization of the section end is of assistance in attaining this object. If there is pus beneath the ligature the drainage of the latter is liable to be affected.

### Reports on Therapeutic Progress.

CASE OF STR YCHNINE-POISONING, DEATH ENSUING UNUSUALLY LONG AFTER ONSET OF SYMPTOMS.

HENRY (Australasian Medical Gazette, March, 1893) reports that on the 27th of January he was called to see a man, aged forty-six, who had taken strychnine with suicidal intent. He lived close by, and within five minutes the man's hut was reached. The patient (a very robust and splendidly-developed man) lay on the floor in convulsions, most marked then about the lower half of the body. He stated that he had about three-quarters of an hour before taken "about as much strychnine as would lie on a shilling,"—a dose, probably, of 7 to 10 grains. He had poured it dry on his palm, then tossed it into his mouth, and washed it down with water. To more rapidly produce an effect he had refrained from taking breakfast. He had made his wife watch the act, and then ordered her, by threats, to wait by until symptoms began. He then sent her to a friend with a letter detailing his intention. This was given to the police about 9.15 A.M. As soon as possible 40 grains of chloral and a drachm of bromide per rectum was injected; then, after a little difficulty (caused by his voluntary resistance, for the jaws were not then affected) and thorough gagging, the pump was put to work. No food was present. stomach was washed out about a dozen times until all the alkaloid unabsorbed was probably Soon after this the paroxysms became infrequent,—one short attack about every twenty minutes or half-hour. At eleven they increased in violence, and occurred about every ten minutes. Each one lasted from ten

to twenty seconds, and left him exhausted. About 11.15 a very severe and prolonged paroxysm occurred. He became perfectly livid, and was within an ace of suffocation. More chloral and bromide was administered. Shortly after this he fell into a deep chloral sleep.

For over an hour he was profoundly under the chloral and perfectly flaccid (having taken ninety grains in all). At 1.15 he awoke and talked freely, felt better, desired to recover, and was free from twitching. This was more than four hours after the symptoms had begun. At 2 P.M. the convulsions returned, and 10 grains of chloral given reduced them in force and frequency, but did not abolish them. At 4 P.M. his condition seemed satisfactory. He was given 30 grains of bromide at 4.30, as the signs of strychnine had returned more markedly. At 5.45, while conversing, he suddenly took a paroxysm very similar to one particularly referred to as occurring at 11.15 A.M. Opisthotonos was well marked; the legs were rigid and wide apart. Rapid asphyxia supervened in a few seconds, and on the spasm suddenly relaxing he was found dead.

Referring to the paroxysms, they did not occur more often when most frequent than every ten to fifteen minutes. A noticeable feature was the extremely sudden cessation of each fit. He would be writhing vigorously one moment, the clonic movements implicating apparently the whole body, and when the climax seemed at hand, without any gradation, the body would instantaneously become limp. His chief desire was to drink water and to be turned on his side, both procedures being carefully avoided by attendants. He perspired copiously, and had a premonition of the approach of each convulsion before it came.

The particular point of interest in this case is the length of time that elapsed between the onset of symptoms and death,-a period of at least eight and three-quarters hours. All the teachings and the standard works state in effect that once the symptoms of strychnine-poisoning commence, they progress rapidly either to recovery or death; that the poison is so quickly eliminated that if the patient live two hours his chance of recovery is good, and practically certain after four or five. Stevenson (Taylor, 11th ed.) gives five and a half hours as the longest period he had seen elapse before death; and both Taylor and Guy Ferrier (5th ed.) give six hours as the outside limit. Ringer (12th ed.) says, "In a fatal case death is rapid, but if the patient survive two or three hours sanguine hopes may be entertained of his recovery."

### TREATMENT OF MYXŒDEMA WITH IN-TERNAL ADMINISTRATION OF THYROID GLAND.

DR. S. LAACHE (Deutsche Medicinische Wochenschrift, March 16, 1893) reports a very interesting case of myxœdema, which he treated successfully with the thyroid gland of the sheep and calf. The patient was a well-to-do baker, forty-nine years of age, happily married, but childless. He had never contracted any venereal infection, nor was he given to an excessive use of either tobacco or alcohol. No cause was known for his disease, which had come on gradually. At first he experienced weariness, headache, loss of memory, shortness of breath, palpitation. After an attack of influenza it developed more rapidly. His body swelled, the face, arms, and legs showing this especially at first. His voice became hoarse. For years his bowels had been very sluggish,sometimes eight days elapsed without any passage,-and on this account he had long made use of various laxatives. Formerly he suffered much from rheumatism in the back, and he twice visited a sulphur spring for it. He came to place himself in Dr. Laache's care early in October, 1892. The patient, as shown in a picture of him, was then a gloomy-looking man, with very thin hair, beard, and eyebrows. His forehead appeared deeply furrowed and the whole face much swollen. To 1 1/3 drachms of thyroid gland, chopped up, 30 drachms of pure glycerin were added, and at the end of twenty-four hours the preparation filtered. This was given in the course of a day. After five days the patient was feeling miserable, with headache, etc., and was put to bed, the thyroid juice being discontinued for a time. On the twelfth day it was resumed again, but now 3/2 drachm a day was given in a watery decoction, with the addition of salt and bouillon. By the 29th of October his appearance was much improved, his voice was less funereal, and he spoke faster, but still complained of headache, dizziness, and lassitude. Early in November the thyroid treatment was again omitted for a few days. The dizziness and headache were only prevented by quiet rest in bed. The appetite improved. At the middle of November he was taking 1/2 drachm of thyroid chopped fine and with salt and pepper. Then the dose was further reduced to 1/4 drachm every second day, and finally only every third day. From the 2d of December the improvement advanced steadily and rapidly, and on the 25th of January he was discharged cured. Laache finds it hard to account for the action of the dose. No change

in the patient's own gland could be noted. His hair grew again vigorously on face, head, and body. The picture of the cured man looks many years younger than he did when ill.

## THE TREATMENT OF CHLOROSIS BY IRON AND SOME OTHER DRUGS.

STOCKMAN contributes to the British Medical Journal for April 29, 1893, and May 6, 1893, a paper upon this subject, from which the following is abstracted. After summing up the various theories in regard to the absorption of iron, he gives the following results, which we reproduce in extenso:

"It seems to me, also, that the question cannot be solved by these methods; the presence of iron in our food, in the tissues and secretions of the body, its constant ingestion and excretion, and the small quantities with which one has to deal, apparently place a complete barrier in the way of rigidly proving by chemical methods that it is or is not absorbed. It is certain that iron in organic combination can be absorbed and used to make hæmoglobin, for the child forms red blood-corpuscles from milk alone, and the chick from yolk alone, in both of which foods Bunge has shown that iron exists only in organic combination. Moreover, in healthy persons the wear and tear of the physiological iron is made up for from the food. appeared to me that the matter would be most easily settled by making observations on anæmic patients, the observations being so contrived as to test the truth of the different theories.

- r. If it be found that inorganic iron preparations given hypodermically will cure chlorosis, there can in such cases be no question of the iron exerting its effect by stimulation of the alimentary canal, or by combining with sulphuretted hydrogen in the intestines. It must be absorbed and utilized to make hæmoglobin.
- 2. If sulphide of iron cure chlorosis when given by the mouth, this alone would serve to disprove Bunge's theory. As previously stated, Bunge holds that the only use of inorganic iron is to neutralize sulphuretted hydrogen in the alimentary canal; but if iron sulphide be the form in which iron is given, the iron cannot take up any more sulphur, and is therefore useless as an absorbent of sulphuretted hydrogen. Ferrous sulphide is also non-astringent, and locally cannot stimulate the mucous membrane. If it cure anæmia it must apparently do so by being absorbed.
  - 3. If bismuth, manganese, and other drugs—

which are just as capable as iron is of absorbing sulphuretted hydrogen or of acting as intestinal stimulants—should prove inert in chlorosis, it forms an additional reason for regarding the absorption of iron as indirectly proved.

In this paper I wish to confine myself to questions bearing on the absorption or non-absorption of inorganic iron preparations, without entering into any questions as to the etiology of chlorosis and anæmia. I have for this purpose only used my observations on typical uncomplicated cases of chlorosis. They were all treated in hospital, and if they suffered from dyspepsia or constipation, were carefully dieted and purged. Otherwise they had no medicines except those stated in the reports of the cases. The hæmoglobinometer and hæmacytometer were carefully employed.

### I.—IRON SUBCUTANEOUSLY.

CASE I.—Mill-worker, aged eighteen; ill for about three years, during which time she had taken iron frequently, with some temporary benefit, but had always had a relapse in a very short time.

Date.	Medicines.	Red corpus- cles.	Hæmo- globin. Per cent.
Mar. 28	***************************************	3,620,000	44
Mar. 29	Citrate of iron and so- dium in water, 6 minims subcutane-		
Mar. 30	ously $= \frac{1}{2}$ gr. Fe. 12 minims daily $=$	•••••	•••
	½ gr. Fe		•••
Mar. 31	***************************************	4,700,000	46
April 7	•••••	5,820,000	52
April 10	••••••	5,500,000	56
April 14		5,600,000	66
April 17		5,700,000	70
April 21	***************************************	5,650,000	72

She had in all twelve grains Fe. subcutaneously, and improved in every respect, just as if she had been taking iron by the mouth.

CASE II.—Mill-worker, aged fifteen; ill about a year; is a very pronounced case of chlorosis.

Date.	Medicines.	Red corpus- cles.	Hæmo- globin. Per cent.
April 23	***************************************	3,350,000	28
April 24	Peptonate of iron given subcutane- ously, 10 minims		
	daily = ¼ gr. Fe	•••••	•••
April 27	•••••	2,980,000	30
May 1	•••••	3,600,000	34
May 4	Citrate of iron substi- tuted, 10 minims		
	daily 😑 ¼ gr. Fe	3,820,000	38
May 9		4,020,000	42
May 14		4,640,090	50
May 19		4,490,000	60

The last subcutaneous injection was given on May 17. She got in all six grains Fe. in twenty-four days, and improved very rapidly. She was put on iron by the mouth to complete the cure.

CASE III.—Nurse-maid, aged sixteen; ill for two months. This is her first illness of the kind.

Date.	Medicines.	Red corpus- cles.	Hæmo- globin. Per cent.
Jan. 30	•••••	4,170,000	38
Jan. 31	Citrate of iron and so- dium subcutaneously		
Feb. 3	= ½ or ½ gr. Fe.		
	daily	3,640,000	40
Feb. 7	•••••	4,170,000	48
Feb. 11		4,240,000	50
Feb. 21		4,650,000	66
Feb. 24		4,600,000	68

This patient had altogether 9.5 grains Fe. subcutaneously, and improved rapidly as soon as the iron was begun.

Case IV.—Girl, aged twenty-three; ill for four years. Suffers severely from dyspepsia and constipation.

Date.	Medicines.	Red corpus- cles.	Hæmo- globin. Per cent
April 17	Citrate of iron and so- dium subcutane- ously, 12 minims		
	daily= ½ gr. Fe.	4,000,000	48
April 21	***************************************	4,200,000	50
April 27	1/4 gr. Fe	4,440,000	56
May I		4,900,000	60
May 4		4,900,000	70
May 15		5,220,000	72
May 19		4,900,000	74

She had eleven grains Fe. subcutaneously.

In all four cases the improvement was without doubt due to the iron. The total amount of Fe. administered in each case was comparatively small, and even all this is not utilized, as I invariably found iron in the urine. In no case did I observe any ill effects, except in Case IV., where the ½ gr. Fe. caused nausea and colic, which disappeared on reducing the dose.

On looking up the literature of the subject I found that there was abundant evidence that iron given hypodermically will cure chlorosis and anæmia; but it does not seem ever to have occurred to any one previously that this is a strong argument in favor of the absorption of iron. Rosenthal, Luton, Neuss, Glaevecke, Da Costa, Chiara, Mori, Alvazzi, Foà, Gauthier, Ciamarelli, Vachetta, Nasse, Huguenin, Goudran, and some others have all reported cases of anæmia and chlorosis which were

successfully treated with hypodermic injections of various preparations of iron. Further, Vachetta has cured cases by injecting albuminate of iron into the peritoneal cavity, while Chalhoub has given it with success per rectum.

The evidence, therefore, is overwhelming that iron will cure some forms of anæmia without ever having had the opportunity of stimulating the alimentary canal or of neutralizing any possible sulphuretted hydrogen in the bowel. Iron given subcutaneously is now known to be stored up in the liver chiefly, from which it is slowly excreted into the blood,—probably in some organic combination,—and no doubt thus subserves the gradual necessities of the organism. It ultimately gets excreted into the bowel, but so gradually and in such small amount that it can have no influence on it or its contents.

Whether the hypodermic injection of iron preparations is a good and rapid method of curing chlorosis is another matter. Many of the above-mentioned authors report very favorably of its value in cases where iron could not be retained by the stomach, or seriously disturbed digestion. I must confess I have never met with a case of chlorosis where iron judiciously administered disagreed at all seriously with the patient's digestion. Quincke and Hirschfeld both object strongly to the pain caused by hypodermic injection; but if the solution be thoroughly neutral and the injection be made into the thick tissues of the back, it is not painful. None of my patients ever objected to it, and I never saw any worse effects than slight local hardness. The dose, however, which one can safely give is small, and recovery is probably more rapid on larger doses given by the mouth. One cannot give above 1/2 grain Fe., and even this is too much for some patients. There is also some risk of it irritating the kidneys (Glaevecke, Kobert), although I never saw the slightest trace of this. No preparation thoroughly satisfactory for hypodermic use has yet been proposed, and thus its exact value is somewhat difficult to gauge.

#### II.—Sulphide of Iron.

To certain cases of chlorosis pure sulphide of iron was given under the same conditions as before,—namely, that the bowels were regulated by purgatives, but no other medicines given except those stated in the reports.

Case V.—House-maid, aged twenty-two; ill for some months. Had a similar illness two years ago, which was cured by Blaud's pills. Appetite is poor, and there is severe constipation.

Date.	Medicines.	Red corpus- cles,	Hæmo- globin. Per cent.
Jan. 22	Ferrous sulphide, 4 grs. thrice daily		<b>.</b>
Jan. 26	grs. turice daily	3,540,000 3,420,000	50 50
Jan. 30	••••••	4,020,000	56
Feb. 6	***************************************	3,840,000	64
Feb. 11	•••••	4,420,000	72

She now felt quite well and left the hospital.

Case VI.—House-maid, aged twenty-four; ill for a few months, but has had frequent illnesses of the same kind since she was sixteen years old. She has no dyspeptic symptoms and only very trifling constipation.

Date.	Medicines.	Red corpus- cles.	Hæmo- globin. Per cent.
Feb. 6	Ferrous sulphide, 2		
	grs. thrice daily	2,110,000	32
Feb. 11		2,200,000	38
Feb. 19	***************************************	3,140,000	44

The increase in these cases and in another was perfectly marked, but there is a fallacy in giving ferrous sulphide in this way, expecting it to reach the bowel unchanged. The hydrochloric acid of the stomach will convert it, in part at least, into ferrous chloride, which passes into the bowel in a form ready to combine with sulphuretted hydrogen. To obviate this objection, the ferrous sulphide was enclosed in keratin capsules. Such capsules (if properly made) are not affected by the gastric juice, but as soon as they reach the alkaline juices of the duodenum they dissolve and liberate their contents. Inorganic iron in the form of ferrous sulphide was thus introduced into the bowel, and it is thus incapable of absorbing more sulphuretted hydrogen, or of acting as a stimulant to the mucous membrane.

Case VII.—Girl, aged nineteen; ill for four months; slight dyspepsia; no constipation.

Date.	Medicines.	Red corpus- cles.	Hæmo- globin. Per cent.
Sept. 23	Ferrous sulphide thrice daily in		
	keratin capsules	4,520,000	48
Sept. 28		4,320,000	48
Oct. 5	••••••	4,280,000	60
Oct. 20		4,800,000	60
Oct. 26	•••••	5,340,000	84

CASE VIII.—House-maid, aged twenty; ill nearly a year; has been taking Blaud's pills without benefit; suffers from dyspepsia and constipation.

Date.	Medicines.	Red corpus- cles.	Hæmo- globin. Per cent.
Oct. 7	Ferrous sulphide, 41/2 grs. thrice daily in		
	keratin capsules	3,550,000	36
Oct. 17	•••••	4,200,000	70
Oct. 26	***************************************	4,000,000	72

Both of these cases, therefore, recovered rapidly. It appears to me that this result alone is sufficient to disprove Bunge's theory that inorganic iron is useful simply by absorbing sulphuretted hydrogen in the bowel. Further, I have treated cases with small doses of reduced iron (¼ to ½ grain thrice daily), and they have recovered rapidly and satisfactorily. It can scarcely be supposed that such small amounts of iron would combine with sufficient sulphuretted hydrogen to make much difference in the quantity of that gas present in the intestines.

### III.—BISMUTH AND OTHER DRUGS.

I treated several cases of chlorosis with bismuth oxide, subnitrate, and salicylate, but have only kept an accurate record of one. In no case was there any improvement effected in the blood condition until iron was substituted, when recovery took place rapidly. Bismuth is quite as capable as iron of absorbing H<sub>s</sub>S in the bowel if that were all that is necessary for cure.

Case IX.—Table-maid, aged nineteen; ill five months; suffers from pain after eating, and constipation.

Date.	Medicines.	Red corpus- cles.	Hæmo- globin. Per cent.
Jan. 3		4,000,000	55
Jan. 4	Bismuth oxide, 30		
•	grs. four times daily	3,996,000	55
Jan. 7	•••••	4,080,000	56
Jan. 8	Bismuth oxide, 30 grs. six times daily.		
Jan. 13		4,008,000	54
Jan. 14	Ferrum redactum, 5 grs. thrice daily.		•
Jan. 17		4,768,000	61
Jan. 22	***************************************	5,088,000	67
Jan. 30		5,016,000	78

Bismuth relieved gastric dyspepsia, but did no good otherwise.

The other cases got very varying doses, but all with the same unsatisfactory results. This is a further argument against Bunge's theory, because large doses of bismuth must absorb more sulphuretted hydrogen than the usual doses of iron, and thus, if Bunge be correct, should quickly cure chlorosis.

Certainly the balance of evidence is not in

favor of arsenic as a hæmatinic in chlorosis or in health. My own cases bear out this view. They were all treated in hospital, and were cases of typical chlorosis without any unusual complication.

CASE X.—Nurse-maid, aged seventeen; ill for three months; appetite good; no dyspepsia and no constipation.

Date.	Medicines.	Red corpus- cles.	Hæmo- globin, Per cent,
Nov. 18	Liq. arsenicalis, 5 minims thrice daily		
	after food	2,180,000	25
Dec. 1		2,430,000	26
Dec. 7		2,190,000	25
Dec. 12		2,160,000	26
Dec. 13	Ferrum redactum, 3 grs. thrice daily.		
Dec. 17		3,020,000	32
Dec. 21		3,480,000	46
Dec. 24		4,120,000	52
Jan. 4		5,060,000	60
Jan. 7		4,980,000	66
Jan. 22		4,520,000	78

The blood in this case contained a very large number of undersized corpuscles, while many were pear-shaped, cucumber-shaped, and otherwise badly formed. The arsenic agreed perfectly, but during its administration no change for the better took place either in the blood or general condition. Both began to improve almost at once when iron was substituted.

Case XI.—Table-maid, aged twenty; ill for nine months, during which time she has been taking iron almost constantly, but has only improved slightly and temporarily.

Date.	Medicines.	Red corpus- cles.	Hæmo- globin. Per cent.
Oct. 21	Liq. arsenicalis, 5		
	minims thrice daily	4,480,000	44
Oct. 26		4,220,000	42
Oct. 30		•••••	44
Nov. 4		3,940,000	42
Nov. 9		4,200,000	42
Nov. 10	Ferrum redactum, 2 grs. thrice daily.		
Nov. 16		4,250,000	50
Nov. 21		4,650,000	55

She left hospital, but continued to take iron. Here also no improvement in the blood or otherwise was observable while she was taking the arsenic, but it became at once marked on iron being given instead.

CASE XII.—A domestic servant, aged twenty; ill for several months; has the usual symptoms of chlorosis, with a good deal of gastric dyspepsia, but no constipation; has been treated with Blaud's pills without benefit.

Date.	Medicines.	Red corpus- cles.	Hæmo- globin. Per cent.
Oct. 6	***************************************	4,340,000	48
Oct. 8	Liq. arsenicalis, 5 minims thrice daily		
	after food	4,600,000	48
Oct. 13	•••••	4,500,000	46
Oct. 16	•••••	4,580,000	46
Oct. 21	•••••	4,500,000	46
Oct. 27	Ferrum redactum		
	thrice daily	4,240,000	42
Oct. 30	• • • • • • • • • • • • • • • • • • • •	4,720,000	50
Nov. 4		5,220,000	56
Nov. 9	***************************************	4,910,000	66

She continued to improve on iron. The small and misshapen red corpuscles, which were very numerous on admission, began to diminish in number only after beginning the iron.

CASE XIII.—House-maid, aged sixteen; ill for seven months, during which time she has taken three gross of Blaud's pills, but without much improvement. A year ago she had a similar illness, which was cured by Blaud's pills.

Date.	Medicines.	Red corpus- cles.	Hæmo- globin. Per cent.
June 13	Liq. arsenicalis, 2		
	minims thrice daily	2,740,000	32
June 19	Liq. arsenicalis, 4		
•	minims thrice daily	3,540,000	34
June 23	•••••	3,350,000	33
June 29	Liq. arsenici hydro-		
	chlor., 8 minims		
	thrice daily	3,120,000	33
July 3	•••••	2,900,000	34
July 4	Fer. Malesci, 20 drops		
	daily	3,100,000	34
July 15		3,680,000	40
July 20	Fer. Malesci, 30 drops		
	thrice daily	4,360,000	43
July 27	•••••	4,160,000	50
July 30		4,200,000	53

She went to the country, still taking iron, under which she completely recovered, but had a relapse about six months afterwards.

CASE XIV.—Dress-maker, aged twenty-one; ill for four months. In this case the arsenic had not a fair chance, as the patient suffered greatly from gastric dyspepsia and slight feverish attacks. In consequence it was not given quite regularly. On admission, May 19, she had 4,960,000 red corpuscles and sixty-six per cent. hæmoglobin; on June 19 she had 4,740,000 red corpuscles and sixty-six per cent. hæmoglobin. During this time she was taking liq. arsenicalis in 2- to 5-minim doses, generally thrice daily, and the corpuscles and hæmoglobin oscillated somewhat, but this I attribute rather to her dyspepsia, headaches, and feverish attacks than to the arsenic. As soon as she

was put on saccharated carbonate of iron, 10 grains twice daily, the blood condition improved steadily and uninterruptedly.

Five cases is not a large number, but the results are supported by those of other observers. as previously mentioned; and besides, the uselessness of arsenic was so obvious in the appearance of the patients that it seemed quite unnecessary to increase the number. The immediate improvement when iron was substituted for the arsenic was most striking. My cases show no reason to suppose that either the red corpuscles or the hæmoglobin are increased by the administration of arsenic in chlorosis. They were all under the most favorable conditions for recovery, their diet and bowels were carefully attended to, and they had complete rest in bed or very gentle exercise in the hospital garden. but not one of them showed any material improvement. In four cases the hæmoglobin was not affected up or down beyond one or two per cent., which is within the limits of error of observation, and, even if correct, is an unimportant variation; in Case XII. it fell six per cent., there being no apparent reason for this, as the arsenic agreed well. Nor were the corpuscles affected, except in Case XIII., where a rise apparently took place at first, but was followed by a fall. Whether this was a real change or simply due to the admitted inaccuracy of the method of counting corpuscles I am unable to say. In no case did arsenic improve the irregularities in size and contour of the red bloodcorpuscles. My own opinion is that it exerts no direct influence on the blood in chlorosis.

Whether it has an indirect value in chlorosis when given in combination with iron is very difficult to say. I have several times attempted to compare the relative rapidity with which cases treated with iron alone and iron plus arsenic recover, but it is impossible to do so satisfactorily, for the simple reason that apparently similar cases vary much in the time taken for recovery under the same treatment. In so far as it acts as a gastro-intestinal tonic, arsenic may improve appetite and digestion, and thus indirectly assist in the cure; but if it irritates and lessens appetite it will exert a contrary effect; in fact, certain writers state expressly that they never give it along with iron in chlorosis, because it is apt to disturb digestion. I myself have seen this in several cases. which did much better when arsenic was omitted from the prescription. However, it usually agrees well enough when given in small doses.

The only other point which occurs to me in this connection is one largely, if not purely, theoretical. Arsenic is credited with lessening tissue metabolism, and thus diminishing the amount of oxygen required in the body. In chlorosis the breathlessness is due partly to the lessened oxygen-carrying capacity of the red corpuscles. Arsenic, by diminishing the demand of the tissues for oxygen, may decrease the breathlessness of the patient, and thus add to her comfort. The view, however, which I wish to emphasize here is that arsenic, if it act beneficially at all in chlorosis, does not do so by any direct effect in increasing the number of the red blood-corpuscles or the quantity of hæmoglobin contained in them.

I have treated several cases of chlorosis with the binoxide and sulphate, and never saw the slightest improvement result. Only two of them were kept in hospital, but the failure of manganese to cure chlorosis was so marked that it seems sufficient to report one case.

CASE XV.—Girl, aged eighteen; ill for three years, during which time she has been treated with many kinds of iron preparations, but only improved slightly and transiently.

Date.	Medicines.	Red corpus- cles.	Hæmo- globin. Per cent.
May 15	• • • • • • • • • • • • • • • • • • • •	2,425,000	26
May 16	Manganesii oxid. purif., 10 grs. twice daily.	•	
May 22	••••••	2,750,000	26
May 28	•••••	2,420,000	26
May 29	Ferri carb. sacchar., 10 grs. twice daily.		
June 2	• • • • • • • • • • • • • • • • • • • •	3,020,000	30
June 8	••••••	4,100,000	46
June 13	•••••	3,880,000	52
June 16		4,340,000	60
June 23	•••••	4,580,000	72
June 29	• • • • • • • • • • • • • • • • • • • •	4,660,000	78

In a fortnight absolutely no improvement was made on manganese, while the substitution of iron increased the corpuscles and hæmoglobin materially in five days. I never found manganese in the urine.

### HYDROCHLORIC ACID IN CHLOROSIS.

Zander, arguing that the iron of the food is sufficient for the cure of anæmic conditions, and that this iron is not absorbed, owing to the deficiency of the digestive juices, has used hydrochloric acid to make up this deficiency and improve digestion. He gives no exact particulars, but states that he has treated many cases of chlorosis with hydrochloric acid, sometimes with pepsin in addition, and that he has thereby obtained more satisfactory results and more lasting cures than by the iron treatment. I have been unable to confirm Zander's re-

sults. Two cases only were treated with acids, but as these made absolutely no improvement, or rather as both became worse, I thought it waste of time to pursue the matter further. Whether hydrochloric acid may not be a useful adjuvant to iron in treating the dyspepsia of chlorosis is another matter, but the attempt to determine its value exactly is met by the same difficulties as I have stated at length under arsenic. It certainly does not improve the blood condition.

CASE XVI.—Girl, aged twenty-five; ill for two months, but has previously had several similar illnesses. In addition to the acid she had saline purgatives or an enema daily, as there was marked constipation.

	•		
Date.	Medicines.	Red corpus- cles.	Hæmo- globin. Per cent
Nov. I	Acid. hydrochlor. dil., 10 minims thrice daily in water after		
Nov. 9	food	3,700,000	36
	daily	3,457,000	• 36
Nov. 16	•••••	3,430,000	33
Nov. 17.	Ferri carb. sacch., 10 grs. thrice daily.		
Nov. 21		3,500,000	34
Nov. 23	•••••	4,457,000	40
Nov. 28		4,000,000	• 48
Dec. 5	***************************************	4,500,000	62
Dec. 7	***************************************	4,700,000	76

CASE XVII.—Domestic servant, aged eighteen; ill for some months; appetite and digestion good.

Date.	Medicines.	Red corpus- cles.	Hæmo- globin. Per cent.
Nov. 11	Acid. hydrochlor. dil.		
•	after meals	2,987,000	34
Nov. 21	•••••	3,010,000	38
Dec. 6		3,000,000	30

She afterwards improved on iron.

In both cases the acid agreed perfectly well, but the blood deteriorated during its administration.

Dr. Hale White has practically settled this question. He treated five cases with hydrochloric acid, and found that the increase of corpuscles and hæmoglobin was trifling, no more, in his opinion, than complete rest and full diet might account for.

I have treated five cases in hospital on Sir Andrew Clark's plan, omitting the iron. In the first case, after eleven days' treatment, there was two per cent. diminution in the hæmoglobin; in other two cases, after eleven and twenty-one days, one per cent. diminution; in another, after fourteen days, there was a loss of four per cent.; and in the fifth, after fourteen days, a gain of four per cent. hæmoglobin. The addition of iron caused a rapid improvement in them all. I have besides observed several cases outside the hospital, and never found that improvement took place until iron was given in addition to, or in place of, the purgatives.

The same is true of purely dietetic treatment, either alone or combined with out-door exercise or rest in bed. Hollis found that a week's rest in bed only caused an average increase of one per cent. of hæmoglobin; Graeber, that improvement ceased whenever he stopped iron, and then began again when iron was resumed. This accords entirely with my own results in several carefully-observed cases. To regulate the bowels and to use a nutritious and digestible dietary are general rules of living both in health and sickness; they contribute greatly to bodily comfort and well-being, but they cannot be regarded as specific for the cure of anæmia, or more valuable in it than in many other morbid conditions.

Many cases do not begin to improve on iron until they have rest in bed. This is matter of common experience, and I have frequently found it occur. It is impossible to discuss the reason in this paper, as it would carry us far beyond its assigned scope.

BEST FORM OF ADMINISTRATION AND DOSE OF IRON.

At present this is largely a matter of opinion; different practitioners use different preparations, apparently with equally satisfactory results. Formerly the astringent preparations were most in fashion, now it is the milder preparations and protosalts. No proof has yet been given that any one preparation of iron cures chlorosis more quickly than another, and we shall probably make little progress in this direction until we know more about the form and conditions of absorption. Havem holds the oxalate to be most satisfactory, while others think they get the best results from the protochloride, carbonate, perchloride, double salts, etc. Meanwhile, it seems most rational to use those preparations which disturb digestion least. Latterly I have employed chiefly reduced iron and freshly-prepared carbonate. Frequently, if there be gastric dyspepsia, I grain of reduced iron along with bismuth subnitrate agrees perfectly well if given before food.

As regards dosage, there is a general idea that very large doses give the most satisfactory results, but on looking over the literature I find that large doses of iron have often been protested against on the ground that they tend to disturb digestion, and also that small doses act equally well. I am not yet able to express any decided opinion on this point, but latterly I have been using much smaller doses (1 to 2 grains of reduced iron or carbonate of iron twice or thrice daily), and find that the cases recover quite satisfactorily.

Of one thing I feel convinced,—namely, that in chlorosis the ordinary inorganic preparations of iron cure much more quickly than organically-combined iron does. Patients fed on even a rich and varied diet, containing plenty of organic iron, do not, as a rule, recover until inorganic iron is administered. have tested this frequently, and have no doubt it holds good in the great majority of cases, although some cases of chlorosis do recover spontaneously and without any treatment,—that is, on the iron of the food alone. From an experiment of Subbotin's it does not seem to be the case that a diet rich in organic iron causes a high percentage of hæmoglobin, although one would have expected it to be so. He fed two pigeons on yolk of egg for twenty-six and thirty days respectively, but at the end of that time their hæmoglobin was considerably less than that of two pigeons which had been fed on grain. Now yolk of egg is particularly rich in organic iron.

Blood given subcutaneously (Ziemssen, Silbermann) or by the stomach (Benczur) will cure anæmia; but Gherardini has shown that it is extremely indigestible, that the hæmatin is very partially absorbed, and that it is a very undesirable form in which to give iron. In persons with weak digestion it does harm. Kobert agrees with this; but as he is strongly of opinion that organic iron only is useful in chlorosis, he has prepared from blood two substances, which he calls hæmol and hæmogallol. and which contain all the iron of the hæmoglobin in organic combination. They are insoluble brown powders, tasteless and unirritating. He finds that this iron combination is readily absorbed from the intestinal canal, and states that it is a successful method of treating chlorosis. Two cases, however, treated with these preparations did not give me very encouraging

CASE XVIII.—Domestic servant, aged twenty-two; ill for about six months.

Date,	Medicines.	Red corpus- cles.	Hæmo- globin, Per cent.
Feb. 20	Hæmol, 5 grs. thrice daily	2,700,000	34
Feb. 29 March 1	Hæmogallol, 10 grs.	2,720,000	35
March 5	thrice daily Ferrum redactum, 2	2,720,000	33
	grs. thrice daily.		
March 11	••••••	3,110,000	35
March 15	********	3,080,000	42
March 23	***************************************	4,100,000	60
March 28	***************************************	3,900,000	70

She had one hundred and fifty grains of hæmol and one hundred and twenty grains of hæmogallol in a fortnight without the slightest benefit, while reduced iron improved her condition at once.

CASE XIX.—House-maid, aged eighteen; ill for some months.

Date.	Medicines.	Red corpus- cles,	Hæmo- globin. Per cent
May 2	Hæmol, 10 grs. thrice daily	3,700,000	40
May 18	Ferrum redactum, 2 grs. thrice daily	3,800,000	44
May 25		4,200,000	54
June 13	***************************************	4,930,000	72
June 29	••••••	4,500,000	80
July 9	••••••	5,100,000	82

In this case four hundred and eighty grains of hæmol were taken in sixteen days, but the benefit was very trifling.

One of the great problems in the study of chlorosis is to determine why the patient should not be able to renew the iron of the blood from the abundant iron of the food. Cases of acute hemorrhage are generally able to do so, a few cases of chlorosis do so, but the great bulk of the latter only recover when inorganic iron is given. I have already stated my opinion that (for some as yet unknown reason) inorganic iron is much more helpful towards recovery than organic iron, although in health the latter serves perfectly for the manufacture of hæmoglobin, and is the only form in which iron is ordinarily taken by mankind.

Another point of great interest is to determine the reason why inorganic iron administered to the healthy in no way affects the number of red blood-corpuscles or the amount of hæmoglobin. We have absolutely no knowledge as to how the use of iron by the organism is regulated, but it seems impossible to increase the number of corpuscles or the amount of hæmoglobin above a certain fixed normal. These and other matters must be left for future research.

In conclusion, I wish to touch on one other

matter. It has been often stated that in chlorotics the amount of hæmoglobin is small, and that it is impossible to raise it above a certain point, which is lower than the normal average; and it is pointed out that cases of chlorosis after treatment have seldom more than seventy to eighty per cent. of hæmoglobin (Gowers's hæmoglobinometer). The following explanation of this has been given, and seems to me the true one. During an attack of chlorosis a large number of pale red blood-corpuscles are formed, very deficient in iron. These die out only slowly, and it takes weeks, or even months, before they are quite replaced by the newlyformed corpuscles rich in iron. As the pale corpuscles become less and less numerous the hæmoglobin percentage gradually goes up to the normal. In women, however, its normal is only about from eighty-two to eighty-eight per cent. on Gowers's hæmoglobinometer, and, so far as my experience goes, one hundred per cent. of hæmoglobin is not very common even in healthy men. Leichtenstein states that women from eleven to fifty years of age average eight per cent. less hæmoglobin than men. By the use of iron, therefore, we can scarcely hope to bring the blood of chlorotic women up to one hundred per cent. of hæmoglobin, but by a little persistence in treatment we can readily bring it up to between eighty and ninety per cent., which is the average for healthy young women."

### DEATH FROM POISONING BY EUCA-LYPTUS.

NEALE (Australian Medical Gazette, April, 1893) reports a rare case of poisoning by eucalyptus, which ended in the death of the patient. The case was as follows:

V. B., aged ten, stated to be poisoned with eucalyptus oil. On arrival the author found him dying; lips and gums colorless; chest and neck rigid; the breath coming in gasps; and the pulse too feeble and rapid to count. He died in twenty minutes.

The history was that several of the family had colds; that at nine o'clock on the previous evening the boy, who was quite well, took some blue-gum oil as a preventive, stating the same to his father, and went to bed. In a few minutes the father was attracted by his gasping for breath, and went to him, when the boy vomited heavily. This relieved him, and he breathed well for about an hour, when gradually the struggle for air came on again, and increased until his death, fifteen hours after the ingestion of the oil. There was no purging;

only one vomit; no convulsion. He got out of bed once after he had vomited to take a drink of water. He spoke rationally several times up to within an hour of death; once complained of pain in the right axillary line above the liver; relieved at once by a poultice.

The inquest showed that a little over half an ounce had been taken, and that nothing else could have been taken.

The court adjourned for an hour to enable Dr. Neale to open the body, and the appearances were as follows: Forty-eight hours after death post-mortem congestion was well marked over the whole back and neck and on back and front of all limbs: the abdomen and loins were greenish; no corrosive marks in mouth or pharynx; stomach much distended with gas (foot in length), and on perforation collapsed to less than a third. It contained a small quantity of thick, yellow, odorless fluid (kept for examination). The outer surface white, except for a staining where it adjoined the spleen; inner surface white, thickened, and puckered, as if painted with a mild solution of carbolic acid; not brittle; liver, spleen, kidneys, and bowels healthy. Pleural cavities contained a quart of serous blood; serum not flocculent; no lymph on pleuræ, nor thickening; both lungs collapsed, firm, and bloodless, colored in large patches of pink and white, except posteriorly, where stained with pleural fluid. Right heart contained frothy liquid; the left empty and contracted; the brain soft and pulpy, the membranes only being full of blood.

Since the inquest the author has heard of several authenticated cases where serious symptoms have followed a dose of 1 drachm of eucalyptus oil, in all instances with catching of the breath, and followed by recovery.

Martindale quotes that 80 minims may be taken in two and a half hours, and that it is not so poisonous as carbolic acid. I cannot find any instance reported of death following any dose.

The particular oil was Miller's brand, made in the neighborhood, and of good repute.

This is a case of very great interest, as it raises the question of the toxic effect of large doses of eucalyptus oil.

We know of no recorded cases of poisoning by this drug, if we except one reported early in March by Dr. Croker at Geelong, in which a dose of an ounce is said to have accelerated the death of a book-maker named James Noonan. The description given of the postmortem appearance of the stomach supports the view that a dangerous quantity of the oil had been taken. The amount of pleuritic fluid was undoubtedly great, but from the description given it appears to have been recently effused. Crucial experiments should be made to determine the toxic power and mode of deleterious action of this frequently-used drug.

### A FATAL CASE OF MYXŒDEMA WHICH HAD BEEN TREATED BY THE USE OF THE THYROID GLAND.

In the last few numbers of the Therapeutic GAZETTE we have published abstracts of articles in our Progress columns which detailed instances where the administration of the thyroid gland of a sheep in one form or another seemed to produce amelioration, if not a cure. In the number of the Edinburgh Medical Journal for May, 1893, there are several cases of myxædema recorded by various authors, which have been treated by the use of thyroid glands, and also a paper upon the treatment of sporadic cretinism by thyroid glands. There is, however, in addition, a paper by Dr. John Thomson, who briefly details the case of a woman, aged fifty-one years, who presented well-marked. but not severe, symptoms of myxœdema. The symptoms had developed very gradually, she having been ill more than ten years. The case is fully reported in Bramwell's "Atlas of Clinical Medicine," vol. i., plate 3. Death occurred suddenly just after she had risen to an Dr. Thomson remarks that, erect posture. while the state of the heart-muscle which was found in this case was amply sufficient to account for the fatal syncope, one can scarcely doubt that the thyroid treatment may possibly have had some influence in hastening the end. The dose of the thyroid was certainly small (21/4 thyroids in three weeks), but still it had already demonstrated the activity of its action by the very marked effect it had produced on the subcutaneous swelling.

The lesson which the case teaches is, not that we should refuse to treat patients with unsound hearts, but that our precautions in such cases should be more stringent. The dose should be much smaller than in more robust cases. The patients should be confined to bed from the beginning of the treatment, and means should be taken to insure that directions as to complete rest and the recumbent position are more strictly carried out than they, unfortunately, were in the case of this patient.

A SPECIAL FORM OF OPHTHALMIA TO WHICH HOP-PICKERS ARE LIABLE.

PERCY T. ADAMS (British Medical Journal, May, 13, 1893), in a very interesting paper, describes a form of ophthalmia to which the hop-pickers are liable. The symptoms are those of an acute conjunctivitis, sometimes with cedema or muco-purulent discharge, and often keratitis and hypopyon-keratitis. He noted the apparent immunity of men to this disease as compared with women and children. disease is sporadic, and associated, so far as his observations go, with no particular plantation of hops. The article then proceeds to discuss the general considerations as to its etiology, referring to the irritating substances which are used in the cultivation of the hops, and then takes up the chemical constituents of the hopplant, and gives the result of its microscopical examination. Referring to the probable mode of the production of this ophthalmia, he writes as follows:

Belonging, as the humulus lupulus does, to the same family as the urtica urens, or common stinging nettle, and the order urticacea, which also includes some very severely stinging foreign specimens, and knowing that the hop-plant possesses sharply-pointed appendages, it is not improbable that this painful affection, which is produced immediately and often continues to become worse, is explained by the introduction, either by movements of air, by gravitation, or upon the hands of the hop-pickers, of some of the spinous processes of the hop-plant, which, becoming impacted in the conjunctiva or the cornea, form the initial cause of the disease. It is also probable that upon them the volatile and resinous matters, etc., of the hop itself, or even micro-organisms, are introduced, which modify the subsequent features of the disease.

The treatment varies according to the degree of severity of the disease. If purely conjunctival, sedative lotions and irrigation of the conjunctival sac, combined with hydrochlorate of cocaine, are most efficacious. In the more severe cases, the local application of a belladonna lotion in the form of a graduated and saturated compress, the artificial leech, and the administration of a grain or so of calomel internally are to be recommended.

## THE STERILIZATION OF OPHTHALMIC SOLUTIONS.

Sydney Stephenson (Medical Press and Circular, May 3, 1893), referring to the flasks recently introduced by Dr. Stroschein (see ab-

stract, Therapeutic Gazette, January, 1893), writes as follows:

The flasks, of elegant shape and admirable construction, are made of thin glass, so as to bear heat without breaking. Each consists of two parts,-namely, a pipette and a bottle to hold the solution. The pipette-traversed, of course, by a central channel—is capped by an India-rubber nipple, which can be removed at pleasure. It fits into the bottle. In order to sterilize the contained solution, the nipple is removed, the pipette reversed and inserted into the bottle. The whole apparatus, supported by wire gauze on a tripod, is then boiled over a small flame\_e.g., that of a spirit-lamp—for three minutes. As soon as boiling-point is reached, steam arises from the liquid and passes through the pipette, which is thus effectually sterilized. Thirty seconds after removal of the bottle from the flame the pipette is inserted in its original position, and the India-rubber nipple having been replaced, the bottle and contents are ready for employment. If the bottle is in constant use, sterilization must be repeated, of course, at intervals of a few days. It is obvious that such boilings will concentrate the solutions, but this difficulty is met by the addition of eight to ten drops of distilled water to each twenty cubic centimetres of the liquid before boiling.

Everybody knows that the solutions employed in ophthalmic work rapidly undergo changes, one of the most constant of which is the development of a fungoid growth. quently, solutions soon become unfit and have to be thrown away. One has endeavored to prevent the onset of these changes by using as the menstruum camphor-water instead of ordinary distilled water, or by adding antiseptics, such as salicylic or boric acids, to the solutions. But these various means do not, in his experience, attain the desired result. On the other hand, sterilization of solutions in the way described above will certainly prevent the appearance of any fungoid growth. The fact should perhaps be mentioned that a series of more than one hundred bacteriological experiments conducted by Dr. Stroschein bear evidence as to the completeness of the sterilization attained by his method. Dr. Stephenson has used Stroschein's bottles extensively during the last few months, and finds that the method recommended is as admirable in practice as it is sound in theory.

Boiling does not seem to impair the physiological action of atropine, cocaine, physostigmine, or homatropine solutions in any way. Presumably, therefore, the chemical characters of these agents remain unchanged by heat.

The bottles vary in color according to the solutions they are intended to contain. Thus, the bottle for cocaine is white, that for atropine black, for homatropine blue, and for physostigmine red. The name of the contained solulution is indelibly etched upon the face of each flask

## TEN YEARS' EXPERIENCE IN CATARACT OPERATIONS.

FREELAND FERGUS (British Medical Journal, April 18, 1893) contributes his experience in cataract extraction during the last ten years. He rarely makes a downward section, and rarely a preliminary iridectomy. His objections to preliminary iridectomy are: 1, two incisions must of necessity give us more corneal astigmatism than one; 2, by a preliminary iridectomy we run twice the risk of infection of the wound; 3, a patient dreads an operation, and there is nothing to be gained in submitting him to two operations where one is sufficient and equally good.

In regard to the size and site of the section, he endeavors to make the puncture and counter-puncture in the apparent corneal margin at such a distance from what he calls the superior horizontal tangent to the cornea as will allow of a two- or three-millimetre flap, and still permit his finishing the section well in the cornea. But he regards the exact position and even the size of the wound only of secondary importance.

In preparing for the operation, the instruments are immersed in a 1 to 30 solution of carbolic acid for at least an hour. They are then carefully dried and placed in a metallic box. They are again immersed in carbolic solution just before being used. The ordinary cleanliness of the operator, patient, and assistants is properly attended to. At the time of the operation the patient's face is thoroughly drenched with a 1 to 10,000 solution of bichloride of mercury, special attention being given to the cleansing of the conjunctiva in all its parts. With proper precautions, he does not consider blennorrhea of the sac a contra-For cleansing after the operation, indication. a solution of boracic acid is preferred. He is very careful to prepare the cocaine solution with boiling water, and does not use a dropper to instil it into the eye.

He prefers to rupture the capsule before iridectomy is made, using a sickle-shaped scratcher, the incision being in the form of the letter T, the horizontal portion corresponding with the upper part of the capsule. He

thinks this combines the advantage of Knapp's capsulotomy with a freer opening for the lens.

Even if the iris has perfectly returned to the anterior chamber, he prefers to make iridectomy. In expelling the lens, he performs all manipulations with instruments. His dressings consist of gamgee tissue fastened by strips of adhesive plaster, or else by an ordinary cataract bandage. Generally speaking, the eyes operated on are dressed every day; sometimes nearly a week elapses.

He describes congenital and traumatic cataracts together, and thinks three forms of operation are justifiable,—namely, iridectomy, when the entire lens is not involved, so as to make a pupil in front of a clear portion of the lens; repeated discissions, or needling; and maceration with extraction. His own preference is for the last operation, concerning which he writes as follows: The best way of treating congenital cataracts consists in dilating the pupil thoroughly, and then dividing both the capsule and the lens very freely-and the younger the patient the freer-with a Bowman's or Tacobs's needle. The patient is carefully watched. If nothing unusual happens, the lens is allowed to macerate for some days, but never longer than a week, and then the pupil is again dilated and the lens drawn off. This is easily done by an ordinary or, perhaps better, a straight keratome, which is thrust through the cornea, and the lenticular matter allowed to escape along its surface.

He thinks that preliminary iridectomy, to which he ordinarily objects, is justifiable to hasten the maturity of the lens. If glaucoma and cataract coincide, then, provided the light-sense is fair, an iridectomy is made, and afterwards the case treated by extraction. If the lens is not ripe, the iridectomy is a preliminary operation. He makes the iridectomy in that portion of the iris which responds best to eserine. He very properly urges the correction of astigmatism after cataract extraction, and praises the value of Javal's ophthalmometer for determining this.

He concludes by the statement that not a single case of extraction has gone wrong in his hands in private practice. The only ones that he has lost have been in the hospital. He has never had, in private or hospital practice, a case of acute plastic iritis ending in closed pupil, nor a case of sympathetic ophthalmitis in the other eye. Both of these conditions he regards as septic and therefore preventable.

[It is to be regretted that this paper, which appears as an abstract of one read at the Glasgow Southern Medical Society, does not give the number of cases of cataract on which Dr. Fergus has operated during the past ten years, and a tabular statement of the visual acuity which he has secured.—EDITOR.]

## RADICAL CURE OF STRICTURE OF THE NASAL DUCT.

DR. SAMUEL THEOBALD (Canadian Practitioner, May, 1803) states that fifteen years ago he called attention to the ineffectual use of small probes in the treatment of lachrymal stricture, and to-day that, while using larger probes than formerly, the majority of the profession are not employing as large ones as he does. In order to test whether it is practicable to insert large probes, he has examined a number of large skulls and cadavers. In his experiments on dry skulls, he found that in seventy ducts probed the average size was 4.7 millimetres in diameter. He believes it is easier to pass large probes in the cadaver than in the dry skull, because there is more give to the tissues and more force can be used than is possible in the dry skull without breaking the bones. In ten subjects examined, he found the average size of the duct to be 4.7 millimetres in diameter, the largest being 7 millimetres and the smallest 3 millimetres, which is equal to a No. 12 probe. He believes that large probes should be used, because the smaller ones do not produce permanent benefit. After an experience of fifteen years with large probes, he says that he approaches no class of cases with more confidence of a successful issue than strictures of the nasal duct. If there is much nasal catarrh or ozæna, then marked success cannot be expected. He thinks it is better to begin with a No. 5 or No. 6 probe, as it is less likely to produce a false passage. His method of operating is first to anæsthetize with cocaine, then pass a small probe through the puncta and canaliculus to look for and overcome any stricture at the junction of the canal and the sac. This facilitates the entrance of the probe-pointed canaliculus-knife into the sac. Having slit up the canaliculus, he passes a No. 5 or No. 6 probe, or a smaller one if he fails with this, having first anointed the instrument with vaseline containing ten per cent. of cocaine. surely entered the sac, he does not hesitate to use force in passing the stricture, and has never seen serious consequences. He passes the probe every other day and increases by one number each time, skipping a number if the probe is freely passed, and dropping back one if the stricture is too tight. In two-thirds of

all of his cases, including children, he has used a No. 16 probe. Having reached the largest probe he intends to use, he increases the interval. The only objection that he knows to the treatment is that the duct may remain too pervious and air pass freely when the nose is blown, but such inconvenience he thinks is very small. In addition to probing he also prescribes collyria, either bichloride of mercury, 1 to 12,000, or alum, 10 grains to the ounce. He does not attack a fistula or carious bone, because they take care of themselves if the passage is open. Stricturotomy has never appealed to him as a rational treatment, nor has he ever had any reason to destroy the lachrymal sac.

### THE SURGICAL AND MECHANICAL TREAT-MENT OF GRANULATIONS OF THE CONJUNCTIVA.

DR. A. TROUSSEAU (Archives a Ophthalmologie, April, 1893), writing concerning the surgical treatment of granular lids according to Darier and Abadie, asks and answers several questions:

- r. Is the treatment dangerous? The author does not consider it dangerous. Out of seventy-five operations he had only one serious accident, a total symblepharon, which was owing entirely to negligence in the dressing. On the other hand, he saw a child that had been operated upon who had lost a large part of the upper eyelid. Still, this serious accident could scarcely be attributed to the method.
- 2. Is the treatment an inconvenient one? Certainly it is. It is painful, requires rigorous watching of the results of the operation, and is associated with certain complications, as, for example, considerable hardness of the eyelids, conjunctival scars, entropion, etc. These complications are not constant, and are not serious enough to discard surgical treatment. The sequences of the operation last from four to six weeks. A month's stay in the hospital is desirable.
- 3. Does the treatment radically cure the granulations? This is, of course, the most important point. Trousseau has not found that in the most serious forms this treatment radically cures the granulations, though it is successful in average cases. In the former cases he has had recourse to complementary treatment of caustics and mechanical proceedings.

From varied experiences he concludes that surgical treatment alone cannot produce recovery, that it must be supplemented by other treatment, and that in his hands it has never given the rapid results that Darier has claimed. While it relieves granulations, it does not cure at once; and, indeed, after the first improvement a long stationary period follows. The mucosa should be normal two or three months after the operation. For average cases scraping and brushing are recommended, with recovery after three or four months.

Touching the question as to the definite character of the cures, and whether relapses take place, Trousseau's experience leads him to believe that without supplementary treatment relapses always occur. He has had patients who were perfectly well for two years, eighteen months, and one year; others returned to him in a very disappointing condition, though they had recovered promptly after the operation. He has arrived at the conclusion that curetting—the most dangerous operation for the mucosa—might be omitted. He prefers brassage only for recent and superficial granulations, and scarification followed by rubbing with sublimate for chronic, flat, and interstitial granulations. For average cases two mechanical proceedings are recommended,rubbing with a pumice-stone dipped in sublimate, and rubbing with cotton wet with the same liquid. Patients prefer these, in his opinion, to sulphate-of-copper cauterizations. They may be alternated with the sulphate-ofcopper method. He thinks that the Knapp forceps are very satisfactory, but that the operations must be repeated several times and followed by vigorous rubbing with sublimate. He has compared the Darier method with several mechanical processes and cautérizations, but has not been able to come to any conclusion other than that no one method can be insisted upon. The tact of the physician must select the proper procedure.

## MINERS' NYSTAGMUS AND TESTING FOR FIRE-DAMP—A PRACTICAL POINT.

SIMEON SNELL (British Medical Journal, May 13, 1893) contributes a short article upon this topic, which is here reproduced in its entirety:

The detection of fire-damp is a vital matter to all concerned in a coal-mine. So much, indeed, is its importance recognized that we have lately had the researches of Professor Clowes resulting in a very delicate hydrogen lamp for detecting small proportions of fire-damp, since it is held by some mining engineers that the proportion of less than one per cent. of gas may be explosive in the presence of coal-dust. The ordinary method adopted in coal-mines—much

less delicate than that just indicated—is by reducing the size of the oil-flame of the safety-lamp until the luminosity almost disappears, and the fire-damp then appears as a pale flame or "cap" above it, this "cap" being due to the presence of gas in the air. The amount of gas present can be estimated by the appearance and dimensions of the "flame cap." This method, Professor Clowes says, does not detect less than two to three per cent., whilst for some purposes it is necessary, he asserts, to recognize as small a quantity as one-fourth of one per cent.

It will therefore be readily seen how desirable it is that, with the ordinary and less delicate method, indications of the presence of gas should be at once recognized.

The class of men who are chiefly, perhaps, responsible for seeing that the pit is free from dangerous quantities of gas are those called "deputies," or "firemen." It is part of their duty to visit the "workings" before the colliers go to their work, and during their working shift, to ascertain that gas in any amount is not present. Throughout their regular day's work, also, they are constantly on the lookout for any indication of fire-damp. Those who are familiar with my writings on nystagmus in miners will be aware that I parficularly mention its presence among this class of underground workers. In my book on miners' nystagmus this part of the subject is dwelt with at some length, and the manner of their work is represented by photographs.

For long it has been my opinion that the dancing of the lights and other objects which forms such a prominent symptom of the disorder would, in especially well-marked instances of the affection, be a hinderance to the delicate detection of the "cap" spoken of as showing the presence of gas. It has been a matter that has been a frequent topic of conversation between myself and my friends among mine authorities. The importance of the subject has been recognized. Further than this, my interrogation of "deputies" afflicted with nystagmus showed some time since that there was the interference anticipated in some cases, at all events. One deputy in particular told me that it did undoubtedly hinder the accurate estimation of the presence of a cap, and that this became more evident as the day wore on at his work. It is, however, only just now that a definite and, I believe, thoroughly reliable investigation of a man at his work has been made. It arose in this way: An official in the management of a colliery some little distance away was much interested in my published views on miners' nystagmus, and in the course of conversation one day he stated that he felt sure he knew a deputy who was the subject of nystagmus. He knew it from the man's manner at his work. When he was in the mine he frequently saw this man. Here was an opportunity for putting to a practical test a nystagmic (presumably) deputy's capacity for detecting fire-damp. My friend undertook to do it in the ordinary course on his going into the mine, as opportunity offered, and in a way that would not lead the deputy to think that he was being tested. These points he carried out, and I append the account of his investigation, which he kindly sent to me.

"The deputy and I had been travelling on a low length of faces, and came to a gate in which we suspected the presence of gas; in fact, could detect it by its smell. He raised up his lamp towards the roof, and a 'cap' began to show upon the top of the flame. He, however, continued to raise his lamp until the flame lengthened out, and then said, 'See, there it is.' I then lifted up my lamp and asked him to speak as soon as the flame began to show the cap. The result was the same as with his own lamp, for he could not see it until the flame began to lengthen out to a considerable extent, and never noticed the first signs of the presence of gas. I may say that about a minute before he had complained of dizziness, which he said came upon him when he knocked about."

Since this investigation my friend has very kindly afforded me an opportunity of examining the deputy. I find him a middle-aged man, who has been a deputy in different collieries for many years. He has well-marked nystagmus; the oscillations are readily induced on looking upward; especially is this the case when the gaze is turned up more or less obliquely to the right. On questioning him, he at once says that on looking towards the roof to examine its condition or for gas, he inclines the head chiefly on the left shoulder. After the oscillations are once set going by looking upward, they will be still noticed, but less so, by looking horizontally, but stop immediately the gaze is turned downward. He is the subject of characteristic and well-marked nystagmus. His complaint of lights and other objects dancing is that they move rather in an ellipse than in a circle.

A "deputy" also, who is an intelligent man, gives an interesting account of the first occasion on which he observed the lights in the mine to dance. He was, with a companion, going up an incline, at the top of which, at the pit bottom, were some lights. He saw, as

he thought, these waving, and taking this to be a signal that a "corve" or "tub" was running away down the incline, he seized and dragged his mate into the man-hole to get out of the way of it. On his companion looking, he knew at once that all was clear, and told him that there were no lights waving. His symptoms date from two years back, but he states that he is somewhat better the last year, having now higher and better roads to traverse.

As I write this article another "deputy" has been sent to me. He ceased to work in the pit a year ago, owing to nystagmus, but oscillations can still be occasioned by keeping his eyes in the position he would have had them at his work. He says that, "to speak the truth, nystagmus does not interfere with testing for gas." He was conscious of it himself, and tells me that he watched other deputies, who he felt sure were suffering worse than he was, and he was convinced of their inability readily to recognize the "cap." In a mine with which a deputy is familiar, he knows better where to expect gas; but if one suffering from nystagmus was employed in a new pit that was "heading out," he would, of course, be at much greater disadvantage in detecting small This man's father was proportions of gas. killed in an explosion many years ago. was a deputy, but whether he suffered from nystagmus or not is not known.

Enough has perhaps been said to indicate that there is a very practical interest attaching to miners' nystagmus, and different from that which has hitherto been associated with it. It would be well, it seems to me, that in any inquiry into mine-explosions, which, unfortunately, are still heard of too frequently, the bearing of nystagmus as a possible element should be borne in mind. Further inquiry will show what practical bearing the subject here discussed has; but mine authorities with whom from time to time I have had the opportunity of discussing it have been of opinion that it is one of importance. Other points connected with this question I must for the present defer.

### THE INDICATIONS FOR SUBCONJUNCTI-VAL INJECTIONS OF CORROSIVE SUBLIMATE.

GRANDCLEMENT (Lyon Médical, April, 1893) concludes that until more ample information is at hand, subconjunctival injections are (1) slightly effectual in affections characterized by infiltration of the cornea; (2) much more effectual in diseases of the uveal tract (iris and choroid); (3) not at all effectual in affections of

the internal layers of the retina. He refers to the experiments of Pflüger with fluorescine, to discover the method by means of which subconjunctival injections penetrate into the interior of the eye, by which it was shown that the liquid injected reaches first the cornea, then the anterior and posterior chambers and the suprachoroidal space, and, finally, to the peripheral layers of the crystalline and of the vitreous humor, but not to the retina. Therefore it is not surprising if microbic or organic diseases which have lodged in the parts to which the sublimate has access when it is injected underneath the conjunctiva, disappear before this agent when their origin is incompatible with its bactericidal or, at least, its antiseptic properties.

Grandclement thinks that it is easily understood why sublimate is helpless against affections of the retina, with which it cannot be put in direct contact for want of lymphatic spaces to carry it to this membrane. Since Schwalbe's investigations, it is shown that the retina is entirely outside of the lymphatic currents of the eye, and maintains only direct and intimate relations with the nervous centres, of which it is one of the earliest emanations. He desires to say, in concluding his article, that it is very possible that these subconjunctival sublimate injections not only act in sterilizing the corneal and uveal territories and freeing them from the microbes or toxines which may visit them, but also produce a veritable local revulsion, and consequently a powerful vaso-constriction on the vascular intraocular stases. He points out that revulsives applied in the neighborhood of the orbit-for example, a fly-blister or a seton—act happily, and that the periorbital injections of antipyrin which he has recommended have been very successful in serious deep-seated and obstinate ocular affections. Hence it seems to him probable that injections of sublimate under the bulbar conjunctiva produce a similar revulsive effect, but still more rapid and intense, because of their greater proximity to, and their direct action upon, the intraocular vascular stases.

### THE EMPLOYMENT OF THE SKIN OF THE EEL (LOTA VULGARIS) IN BLEPH-AROPLASTIC SURGERY.

KATZAUROFF (Wiestnik Oftalmologii, January and February, 1893; abstracted in Annales a' Oculistique, April, 1893) transplanted the skin of a lote to cover an area caused by destruction of both left eyelids and the corresponding temporal region, and at the end of

two days the whole surface of the grafts was pink, smooth, and shining. Fifteen days after the operation the regions occupied by the sections transplanted on the temple decreased notably, and a careful examination showed that it was not due to an atrophy of the grafts, but that they were gradually being covered by a layer of epidermis. This layer passed insensibly from the peripheric portions to the grafts themselves by forming a border around them. Little by little the same process was observed on the evelids. Thus the lote skin grafted on the wound served as a bridge upon which the horny layer of the surrounding skin was developed, and at the end of a month the grafts were completely covered with it. The author saw the patient three months after the operation, and there was no change in the condition of the eyelids.

## RESTORATION OF THE EYELID BY MEANS OF THE SKIN OF A FROG.

GILLET DE GRANDMONT presented to the Ophthalmological Society of Paris (Annales d' Oculistique, April, 1893) a young man, aged eighteen, who was afflicted with cicatricial ectropion of the upper eyelid, rendering closure of the eyes impossible. There was a separation of eight millimetres between the palpebral edges. He proceeded first to suture the eyelids, after relieving the ectropion, obtaining a large surface, which he covered by means of the skin taken from the stomach of a frog, rendered aseptic by allowing the animal to float in a solution of boracic acid. He manufactured a tessellated graft by means of small sections of the skin placed one in contact with the other. The result was good, although several of the sections gave way and had to be replaced. At the end of six months the eyelids were practically normal.

### TRAUMATIC DENDRITIC KERATITIS.

HALTENHOFF (Annales d' Oculistique, April, 1893) describes a case of dendritic keratitis in a man, aged forty-four years, the result of a blow on the eye from a cow's tail. There was ciliary injection, and on the cornea a clear gray spot in the shape of a triangle, beginning near the upper edge of the cornea and ending in a point on a level with the lower edge of the pupil. Examination with a magnifying glass showed the dendritic arrangement of the ulceration. The treatment consisted in painting the conjunctiva with nitrate of silver, one per cent.,

superficial scraping of the opacity, and the application of a solution of sublimate 1 to 2000. The same solution was prescribed as a collyrium, and a salve of atropine was introduced. The lids were closed by means of a bandage. The cure was rapid, and the vision three months afterwards was  $\frac{5}{10}$ .

### PAINFUL MICTURITION IN WOMEN.

In an admirable lecture upon this subject, Her-MAN (Provincial Medical Journal, vol. xii., No. 138) states that about one-half the patients who consult a specialist for diseases of women complain of pain in passing water; but it is only the diseases which cause severe pain which require special treatment, so far as the urethra and bladder are concerned. All these cases of severe pain depend upon local diseases, which can only be discovered by direct examination. There are three places in which disease may exist occasioning this suffering,—namely, the meatus urinarius, the urethra, and the bladder. Pain in the meatus urinarius may be caused by urethral caruncle, by chronic congestion or suppurating cyst of the urethra, by abscess of the urethro-vaginal septum, or by a tender, congested condition of the urethral mucous membrane. Chronic congestion of the urethra is chiefly seen in pregnant women; the urethra is swollen and tender and feels like a thick cord. Not only the act of micturition, but sexual intercourse may occasion almost unbearable suffering.

The treatment for this condition is complete rest, cold sponging of the part, cold hip-baths, the use of vaginal astringent injections, one or two leeches applied by a glass leech-tube to the swollen and tender urethra, and gentle laxatives.

Chronic abscess of the urethra-vaginal septum is rare, and is characterized by a tense, hard, convex, bullous, very tender swelling between the urethra and vagina.

The treatment is evacuation. If there is a spot on the vaginal aspect of the swelling which is thin, and fluctuation is felt, the proper course would be to cut into this thin part. If there is no such spot the urethra should be dilated under an anæsthetic until the canal will admit the finger, and the purulent collection can be evacuated through the urethra.

Suppurating cysts of the urethra form a pouch communicating with this mucous canal by a narrow, somewhat valvular, opening; urine gets into the pouch, decomposes, and inflames the sac. On examination, a round, tender swelling is found in the urethro-vaginal

septum, varying in size from that of a pea to that of a hen's egg. By pressure there will be voided either urine or urine and pus, sebaceous matter, or a calcareous deposit, depending upon the nature of the cyst. These cysts do not run the course of an abscess, which gradually close up once an opening has been made for the escape of pus, but they continue indefinitely in the same state, alternately filling with pus and urine, and being partially emptied by pressure.

The treatment is excision of the whole or greater part of the cyst-wall. This is best accomplished by first laying open the cyst freely from the vagina. What is next to be done depends upon the skill of the operator. The cyst-wall should be dissected out and the raw surfaces brought in contact by means of either catgut or shotted sutures. If a portion of the cyst near the opening is left and the rest is closed, the object of the operation will nevertheless probably be attained, for if the pouch is obliterated there will be no place in which urine can be retained and decomposed, and therefore no inflammation. If the operator mistrusts his manipulative skill, it may be enough simply to open the cyst freely from the vagina, and then, by keeping the vaginal opening from closing by packing with lint or gauze, retention of fluid in the cyst will be prevented, the urethral opening may close, and then the cyst will be left with an opening only into the vagina. If no more urine gets into the cystcavity, inflammation will subside and no further symptoms will be exhibited.

. If there be much inflammation of the cyst, of the urethra, or of the bladder, it may be well to make no attempt at closing the opening until such inflammation has been subdued by appropriate treatment. If the cyst is suppurative, or not open, or the urethral opening of an inflamed diverticulum has become closed, the condition cannot be distinguished from an abscess. When the pus-cavity has been opened, its cystic character will be inferred from its definite smooth fibrous wall. An abscess has not a thick fibrous wall. The inside of a diverticulum may be trabeculated, so that the origin of the pus-cavity cannot always be surely made out from the feel of the interior. If the cavity be an abscess, it will quickly fill up; if it does not quickly become obliterated, it should be treated as a cyst. In some cases the patient will complain of severe burning, cutting pain at each act of micturition, but the meatus will be found to be healthy, nor on palpation through the vagina can any area of inflammation be felt. On urethroscopic examination of the mucous membrane it will be found a vivid red or deep purple, appearing in patches or involving the whole mucous surface. Passage of the catheter is extremely painful.

The treatment is to apply some alterative to the diseased mucous membrane; the best, in the author's opinion, is iodoform. The application is most conveniently made by putting into the urethra a bougie made of iodoform and cacao butter. A little wool put between the labia will prevent the bougie from slipping out. In recent cases the use of three or four bougies. will cure the patient. In cases of very long standing more prolonged treatment will be required. Nitrate of silver is also serviceable in this condition: In some cases application of nitric acid to the tender part is followed by relief. Dilatation of the urethra is also to be recommended. In some cases both the meatus and urethra are healthy, but on passing a bougie great pain is experienced as it enters the bladder. In these cases a urethroscopic examination will show either hyperæmia or fissure of the vesical neck, the symptoms of extreme pain on micturition persisting afterwards; also great frequency, and difficulty in emptying the bladder. Sometimes a little blood escapes with the urine. The urine is clear, and there is tenderness about the vesical neck. Direct examination shows the fissure as a small grayish ulceration, with red, inflamed edges at the vesical neck.

The treatment consists in dilatation of the urethra under anæsthesia; this is best accomplished by means of Hegar's dilatators until the urethra admits the finger. Temporary benefit always follows this procedure, and sometimes permanent cure. The objections to this treatment are that there is danger of septic infection of the bladder and of permanent loss of control over the sphincter. Inconvenience rarely results unless dilatation is carried beyond the point necessary to admit the finger. In case dilatation is unsuccessful in relieving symptoms, vaginal cystotomy is indicated. To perform this operation a director should be introduced into the urethra and held exactly in the middle line. Open the bladder from the vagina by cutting upon the director. If the incision is exactly median, no important part can be wounded. To prevent this opening from closing, Greenhalgh's India-rubber stem may be employed, or the vesical mucous membrane may be sewed to the vagina on each side by a catgut stitch. All pain ceases at once, and if the artificial fistula is kept open long enough, the ulcer heals, and then the fistula can be closed and the patient remains well!

To minimize the discomfort of the artificial

incontinence resulting from this operation, the patient should be kept upon a fracture-bed. The rest in bed is of itself beneficial. If nothing is done to prevent the healing of such an incision of the bladder, it soon either heals or contracts to a canal only large enough to admit a probe. As to how long this fistula should be kept open no rule can be given. If as the fistula heals symptoms return, the artificial opening should be again enlarged.

Baker's method of treating these cases is to keep the patients in bed for only a few days, then to fit them with a urinal, and allow them to get up and enjoy fresh air and exercise. The fistula is kept open for months, and is not closed until the interior of the bladder has ceased to be tender and, in case of cystitis, until all trace of pus or blood has disappeared from the urine. This, however, sacrifices the advantages of rest, and it has the discomfort of constant soiling of the clothing.

## NON-PERFORATING PERITONEAL AND INTESTINAL LESIONS AND THEIR TREATMENT.

THOMSON (Zeitschrift für Geburtshilfe und Gynaekologie, Band xxvi.) says it frequently happens that in operations for fibroid tumors, ovarian tumors, tube-sacs, etc., the tumors are closely fixed to the bowel by adhesions. Two cases are reported by Cleveland in which the peritoneum and muscular layer were torn off for a number of inches. The wound was closed with a continuous suture. One died and the other was saved by a secondary anastomosis operation. Coe reports a case where three or four inches of peritoneum were torn off. from the colon, followed by paralysis of the gut at that point. Often it is only necessary to use an intraperitoneal tampon placed against the wound surface, thus hindering peristalsis, and allowing time for adhesion to take place.

When the bowel itself is diseased, Boldt recommends enterorrhaphy with anastamosis. Small peritoneal defects of one or two inches may be let alone.

The author has made experiments on five dogs. A simple laparotomy was done, and the peritoneum stripped from the bowel for several inches. In others the muscular coat was also removed. In all a small perforation was made and closed again with sutures, and the bowel dropped back into the abdominal cavity. The dogs were killed at different intervals and the condition examined. In some adhesion had taken place between the coils of intestines.

while in others there was no adhesion, and the original wound could scarcely be found.

In conclusion, the author states that defects of about one centimetre should be closed by sutures, and, where practicable, in the long direction of the bowel.

In defects of from five to ten centimetres the bowel should be turned around ninety degrees in the long axis and fixed to its mesentery.

The Treatment of Wounded Ureters.—When a considerable piece of the ureter is accidentally removed, the proximal end must either be turned into the rectum or bowel, and in some cases the kidney even must be extirpated. In a case reported by Pozzi the proximal end was fastened in the loin and the distal in the abdominal wound. Two fistulæ resulted, but were subsequently closed by nephrectomy.

Gusserow closes longitudinal wounds with the ordinary intestinal suture. In a case of end-to-end suture the patient died on the sixth day of abscess and septic peritonitis. In such cases Gusserow recommends opening the abscess through Douglas's pouch, with the formation of an external fistula.

Pozzi also recommends suturing the ureter over a soft catheter, one end of which is to be pushed into the bladder and removed through the latter when union has taken place.

Pawlik adopted the above procedure in one case; death fourteen days later.

Occasionally the partial retention of urine in the kidney, which must necessarily follow the use of sutures, causes complete atrophy of the kidney on that side. No attempt should be made to suture the proximal to the bladder with the hope of re-establishing the urinary channe, it being much better to suture to the nearest loop of intestine.

# EXPERIMENTAL CONTRIBUTIONS TO THE QUESTION OF ANTISEPTICS IN THE TREATMENT OF SURGICAL DISEASES OF THE URINARY PASSAGES.

Krogius and Chydenius (Centralblatt für Chirurgie, No. 17, 1893) have made over five hundred experiments as regards the antiseptic value of corrosive sublimate, biniodide of mercury, nitrate of silver, boracic acid, and permanganate of potassium. Into pure cultures of the bacterium colli commune, proteus vulgaris, staphylococcus pyogenes aureus, and streptococcus pyogenes silk threads were placed and then allowed to remain in the different antiseptic solutions for varying intervals.

The threads were then put into flasks of sterilized urine and cultures made.

From these experiments the authors found that the staphylococcus almost completely resisted the action of the mercury solutions.

The biniodide is much weaker as an antiseptic than the bichloride.

The resistance against the nitrate-of-silver solution was most marked in the colli commune and the least by the streptococcus.

Boracic acid and potassium permanganate exert very little influence on these organisms.

Disinfection of instruments is best carried out by means of a nitrate-of-silver bath, I to 500, for one hour, fatty substances being removed by immersion in alcohol or ether.

## THE TREATMENT OF DIARRHŒA IN HOT COUNTRIES.

DANTEC and BONAMY (Internationale Klinische Rundschau, 1893) are in the habit of using chloroform-water for these cases.

R. Aquæ chloroformii, sat., Aquæ dest., of each, 100 grammes. To be taken at intervals during the day.

When the diarrhea is associated with dysentery, chloroform-water is also used, but at the same time the colon is irrigated with antiseptic solutions.

Bonamy has used injections of corrosive sublimate in dysentery. No poisonous symptoms have as yet been noted. The preparation of the clyster is as follows:

R. Corrosive sublimate, grs. i;
Water, 3xvi.
For two injections, morning and evening.

### ENCHONDROMA OF THE SCAPULA.

FRANK (Internationale Klinische Rundschau, No. 22, 1893) reports the case of a large enchondroma of the scapula resulting from a contusion, in a man forty-five years of age. The tumor was removed by Von Dittel, and weighed about nine pounds. About two years later a small growth was noticed in the clavicle, and in a few months a tumor the size of a child's head was removed.

The following year the tumor began growing in the infraclavicular fossa, and soon reached the size of an orange. This was likewise extirpated and the patient recovered. Another operation was done for a similar growth in the same region a year later.

Still one year later the tumor returned, and a portion of the clavicle and spine of the scapula were removed. One year later the man again returned with a tumor involving the remaining parts of the scapula and clavicle. A shoulder-joint amputation was performed and the entire clavicle and scapula removed. The patient recovered. As soon as the patient was out of bed there immediately developed a marked right convex scoliosis.

### TEMPORARY RESECTION OF THE SYM-PHYSIS AS AN AID TO THE EXTIR-PATION OF TUMORS OF THE BLADDER.

Bramann (Centralblatt für Chirurgie, No. 17, 1893) gives the following technique for the operation: A small median incision is made over the symphysis and another incision at right angles to it, also over the symphysis, extending from cord to cord.

After division of the periosteum a small piece of bone is chiselled out of the symphysis, including that part of the bone to which the recti muscles are attached.

After division of the attachments of the muscles they retract to a point about midway between the symphysis and umbilicus.

After the operation the ends of the bones are brought together and held in apposition by periosteal or bone sutures.

A half-sitting position with flexed legs should be maintained for eight or ten days.

### A CASE OF COMPLETE RUPTURE OF THE URETHRA.

Frank (Internationale Klinische Rundschau, No. 22, 1893) reports the case of a man, aged thirty-three, falling from a height against a gas-lamp, a projecting iron entering his perineum. There was bleeding from the urethra and almost complete retention, and a large hæmatoma was found in the perineum. A metal instrument could be passed without great difficulty into the bladder.

A perineal incision was made, the clot turned out, and the divided ends of the urethra found just behind the bulb. The ends of the urethra were sutured together with two rows of fine silk sutures.

The first row of sutures held the divided urethra together, while the second row held the peri-urethral tissue in close apposition. The wound was completely healed on the seventeenth day, and a No. 19 steel sound could be passed without difficulty.

According to Kauffmann, seventy-three per cent. of the cases of rupture of the urethra have retention of urine.

## EARLY EXTIRPATION OF SARCOMA OF THE KIDNEY.

ISRAEL (Deutsche Medicinische Wochenschrift, No. 22, 1893) says it is possible to diagnose a tumor of the kidney, the size of a cherry, by palpation. He reports the case of a girl, aged six years, who had suffered from hæmaturia for several months. Examination of the ureters through the bladder showed blood flowing from the left ureter. By careful palpation the author was able to make out a small lump about the hilus, which seemed to fill up the pelvis of the kidney.

At the operation a small sarcoma was found occupying the position of one of the pyramids. The kidney was removed and the case recovered.

The mortality of kidney extirpation is about sixteen per cent.

## THE SACRAL METHOD OF EXTIRPATING THE UTERUS.

STEINTHAL (Deutsche Medicinische Wochenschrift, No. 21, 1893) says many cases of malignant disease of the uterus have apparently been cured. Fritsch reports that thirty-six per cent. of his cases remained free after five years; the Berlin clinic, twenty-five per cent.; Leopold's clinic, sixty per cent.

The sacral method of extirpation is to be preferred when the tumor is so large that in doing the vaginal operation the dividing-line between diseased and healthy tissue cannot be made out.

A virgin vagina and a soft uterus are contraindications to the vaginal method.

A very careful dissection should always be made, and the use of *ligatures en masse* should be strictly avoided, as they are apt to hide small foci of disease.

In operating the patient should be placed on her abdomen and the pelvis elevated; the side position may also be used. The elevation of the pelvis has some disadvantages,—sudden death from emboli of the pulmonary arteries, and thrombosis of the thigh and pelvic veins.

The mortality of the sacral operation is no greater than the vaginal.

### THE MODERN TECHNIQUE OF LAPAROT-OMIES.

Döderlein (Deutsche Medicinische Wochenschrift, No. 21, 1893) says all laparotomies, where possible, should be done in a room especially adapted for the purpose. The walls should be coated with an enamel paint and the floor with linoleum. The room should be filled

with sulphur-fumes and sprayed with water, so that free sulphur acid is formed.

The instruments, catgut, silk, sponges, etc., are to be subjected to a temperature of 120° to 140° centigrade (dry heat). The instruments may be boiled in the soda solution and afterwards dried with sterilized gauze.

Catgut may be boiled in sublimate alcohol, and repeatedly washed in absolute alcohol until free from sublimate.

The gauze is best sterilized in steam.

The skin of the abdomen should be thoroughly washed with soap and hot water, with free use of the brush, followed with alcohol, ether, and sublimate solution. Just before the operation the skin should be thoroughly rubbed with a sterilized towel.

In the treatment of the stump after a myomectomy, Zweifel recommends continuous intraperitoneal ligature. All bleeding should be stopped, and the edges of the peritoneum should be sutured as soon as possible, thus closing off the abdominal cavity.

Drainage-tubes do not drain the entire abdominal cavity, but only that part in which the tube lies.

### OSTEOPLASTIC CLOSURE OF DEFECTS OF THE SKULL.

. TIETZE (Archiv für Klinische Chirurgie, Band xlv.) reports two cases of osteoplastic closure of defects in the skull.

The first, a boy aged ten, had a complicated depressed fracture of the frontal bone. The boy was trephined and the loose fragments removed, leaving an opening five centimetres long and three wide. The wound was closed, and patient wore a plate on that side for three years. From the position of the opening and the possibility of an accident, it was decided to try and close it. A flap of bone, including all of the outer table and part of the middle, was taken from the frontal bone, and the flap sutured over the defect with silver wire. There was complete union.

The second case was one of resection of the frontal bone for carcinoma of the dura. The patient, a woman aged fifty-one, five years previously noticed a small ulcer over the right eye, which, during that time, gradually increased in size. The diseased bone was removed with a chisel, leaving an opening about the size of a silver dollar. The dura was removed, and a flap of bone was twisted around from above and allowed to rest directly on the pia. The flap was secured with silver sutures and an iodoform gauze drain inserted at the lower angle of the wound.

The transplanted flap healed immediately, and the bare bone from which the flap was removed was allowed to granulate and was cicatrized with Thiersch's grafts. No changes were noticed either in the peripheral or central nervous system.

## EXPERIMENTAL CONTRIBUTIONS TO THE SURGERY OF THE ABDOMEN.

THOMSON (Zeitschrift für Geburtshilfe und Gynaekologie, Band 26) reports as follows on sutures of the intestines: Chaput employs the Gussenbauer knot, which consists in suturing the edges of the mucous membrane together, and strengthening by a double row of sutures in the peritoneal layer.

Wells prefers either the Lembert or Bishop suture, the latter being a continuous ligature in parts.

In the author's experiments the following technique was carried out: After resection of the small intestine, a fine needle with a feather eye, armed with a long silk thread, is carried through the bowel from the mucous side one millimetre from the line of incision. It is then pushed through the other end of the bowel at a corresponding point from the serous to the mucous side. The suture is left long and the needle again introduced in the same manner from two to three millimetres from the original puncture, and so on around the entire circumference. The sutures are then knotted, the latter all being in the lumen of the bowel. The serous surfaces are well approximated. knots should not be drawn too tight for fear of causing necrosis. The author thinks that the bone plates of Senn have several disadvantages:

- 1. Danger of invagination.
- 2. The plates pressing on the lumen of the bowel, causing gangrene.
- 3. The final fate of the plates is not always certain.

For the simple end-to-end method the Lembert-Czerny should not be used, as it is almost invariably followed by stenosis.

For suturing the author always employs fine silk.

### THE QUESTION OF IMMUNITY AND THE VALUE OF BLOOD-SERUM IN PRE-VENTING CHOLERA INFECTION.

PAWLOWSKY and BUCHSTAB (Deutsche Medicinische Wochenschrift, No. 22, 1893) have made many experiments as to the value of bloodserum in preventing cholera. The experiments were made after Pasteur's method.

A quantity of the pure culture was injected

into the blood of an animal and gave a negative result.

By transmission of the peptotoxine through a series of rabbits and guinea-pigs a culture of great virulence was obtained.

A dose of from 3 to 5 cubic centimetres killed the animals in from twelve to twenty hours.

A very weak culture is injected into the blood or the peritoneal cavity and gradually increased up to the very powerful cultures. In the course of a month many animals were rendered immune.

Five cubic centimetres of the virulent culture were injected into the peritoneal cavity, and in from one to five hours blood-serum from an immune animal was injected under the skin.

Seventy-five per cent. of the animals lived. All the control animals died.

The authors claim to have isolated a substance from the blood-serum of immune animals which possesses as much power to render animals immune as the blood-serum. They experimented upon themselves with the serum from immune animals, but no changes were noted.

### OPERATIONS UPON THE UTERINE AP-PENDAGES WITH A VIEW TO PRE-SERVING THE FUNCTIONS OF MENSTRUATION AND OVULATION.

POLK (American Journal of Obstetrics, June, 1803), in reading his paper with the above title before the American Gynæcological Society, at its session held in Philadelphia, May 16, 17, and 18, 1893, reaches the following conclusions:

- r. In cases of chronic disease of the appendages the incisions should be in the nature of "exploratory incisions."
- 2. The question of removal should be in the main left for determination after the organs have been exposed.
- 3. That the condition of the ovary should be the chief factor in determining the question of procedure.
- 4. That, if need be, this may be determined by exploratory incision of the ovary or puncture.
- 5. That if the ovary contains pus, it and the associated tube should be removed, it being the rule that whenever an ovary is removed the tube must accompany it.
- 6. That if the tube contains pus, the ovary being free from pus or disseminated cystic degeneration, the operator is at liberty to recom-

mend either the removal of both organs or else the partial amputation of the tube, leaving the ovary; and that the same rule should apply in cases of hydrosalpinx and hæmatosalpinx.

- 7. That cysts of the ovary do not indicate removal, provided they are not general throughout the organ and can be enucleated,—hæmatoma of the ovary a possible exception.
- 8. Tubes with open infundibula, even though adherent and affected with parenchymatous inflammation and endosalpingitis, do not demand removal, excepting when one opens into a puscavity.
- 9. A tube whose outer end is closed may be opened, cleansed, and its inner and outer coats coaptated, and then be returned to the abdominal cavity, provided it does not contain pus and possibly old blood.
- 10. Adhesions do not demand the removal of the tubes and ovaries, unless they be so dense that in breaking them the appendages are seriously injured. This presupposes that the appendages in themselves are not sufficiently diseased to demand removal.

### SURGICAL TREATMENT OF GALL-STONES.

Duncan (Edinburgh Medical Journal, June, 1893), after detailing several cases coming under his observation, reaches the following conclusions:

- 1. That when the stones lie in the gall-bladder or lightly impacted in the cystic duct, cholecystotomy is a safe and easy operation.
- 2. That if the stone be impacted in the common duct, the gall-bladder is apt to be small, and such structures as the stomach and colon are prone to be adherent in awkward positions.
- 3. That in such cases it is safe to incise the duct and drain from the wound.
- 4. That, considering the perfect health enjoyed by patients with biliary fistula, there are few cases in which it would be justifiable to form a new route for the bile into the bowel.

### ABDOMINO PELVIC FISTULÆ AFTER CŒ-LIOTOMY AND LAPAROTOMY: ITS PREVENTION AND TREAT-MENT.

MUNDE (American Journal of Obstetrics, June, 1893) states that following the removal of intraperitoneal growths abdominal fistulæ in a large number of cases are formed. They are usually single, and rarely separate into two or more deep passages among the diffuse adhesions in

Douglas's pouch. They are generally directly in the median line, and, if deep enough, the probe or sound can be felt per vaginam directly behind or beside the cervix.

Other abdominal sinuses are liable to remain after the evacuation of abscesses originating in the abdominal and pelvic cavity and pointing through the abdominal wall to the side of the median line, usually close to Poupart's ligament, or into the iliac fossa. Such abscesses may be originally intraperitoneal, either localized purulent peritonitis, or pyosalpinx, or pus ovary, and are separated from the intact peritoneal cavity by more or less dense adhesions. they may be intraligamentous, cellular, due to inflammation and suppuration—usually post partum-of the connective tissue between the broad ligaments and the vagina, rectum, and bladder. Such true pelvic abscesses may attain great size, burrowing in all directions. Usually the pus gropes its way along the pelvic wall, and finally reaches the abdominal skin in the upper portion of the inguinal canal close to the anterior spinous process of the ilium. If the abscess was originally intraperitoneal, it is more likely to point farther inward towards the median line, so that when incised the examining finger finds the peritoneum still attached to the pelvic wall and iliac fossa, the abscess cavity being shut off from the rest of the peritoneal cavity by a wall of firmly-adherent intestines. In the latter case the pus usually does not approach the abdominal wall quite so closely, and the surgeon is obliged to make a deeper incision to reach it than if the pus came up from the pelvic cellular tissue. If the abscess happens to be on the right, it is often impossible to decide whether it is due to an appendicitis or a pyosalpinx. The prevention of these fistulæ would apparently depend upon strict observance of antiseptic precautions, removal of all diseased and infected tissue, employment of only absorbable animal sutures, and closing the wound completely. Observance of these general principles would certainly do much to lessen the number of these fistulæ. It will not, however. prevent their recurrence.

The treatment of abdomino-pelvic sinuses is in the first place removal of the cause. Thus, silk is sometimes found, by gentle probing, occupying the sinus, and may be removed by long forceps. Unhealthy granulations should be curetted away, the canal being irrigated by a I to 5000 bichloride solution and packed lightly with iodoform gauze or plain sterilized gauze, the irrigation and packing being repeated daily. If necessary, balsam of Peru or tincture of calendula, I to 4 of water, may be poured into

the sinus every day before repacking it, in order to stimulate healthy granulation. The stick of silver nitrate or silver probe, heated to red heat and passed to the bottom of the sinus, will sometimes accomplish a cure. Eventually, when the sinus obstinately refuses to close, there are two courses open to the surgeon to attain this object, neither of which is sure or entirely safe. first is, to drain through into the vagina, if the sinus is so deep as to allow the tip of the sound to be felt through the vaginal wall. An incision with knife or scissors is made on the tip of the sound, which latter is pushed through into the vagina, a white-rubber, perforated drainagetube is tied over the knob of the sound, and both are drawn up and out of the abdominal The drainage-tube should be sufficiently long to protrude from the vagina. abdominal end of the tube is secured from slipping into the sinus by a safety-pin. Daily irrigation through the tube with tepid salt water or Thiersch's solution should be carried out until all secretion ceases: then the tube should be drawn down an inch, so as to leave that much of the upper portion of the sinus empty, with a view to its closing. The tube must be retained in place by packing the vagina with iodoform gauze, which need not be changed oftener than once or twice a week. To prevent the tube from slipping too far down or out a stout piece of catgut should be attached to its upper end, which is kept from slipping into the wound by a safety-pin. In a week or ten days the catgut will be absorbed, and by this time the granulations will have closed the upper portion of the sinus. Every week, or oftener, if thought best, the tube should be drawn down an inch or more, so that in this way provision is maintained for drainage without interference with the gradual closure of the upper portion of the sinus. Obviously some weeks at least must elapse before a cure is obtained by this method.

Sometimes while drawing the drainage-tube from the vagina into the fistula the bladder wall is ruptured. This is because it is adherent to the wall of the fistula, and becomes from inflammatory infiltration extremely friable. The accident is not of serious import, since a retained catheter in the bladder and frequent tepid irrigations of this viscus result in closure of this rent in a few days.

When the sinus is ramified in several directions between the pelvic viscera, it is hardly worth while to try to close the one pointing towards the vagina and leave the others untreated. In such cases, if nature does not accomplish a cure they are beyond treatment.

The second course open to the surgeon is to enlarge the wound, as much as is safe, down to the bottom of the sinus, and treat it like any other open wound, by irrigation and wet gauze packing, until it heals by granulation. This procedure is, however, not safe, since there is danger not only of injuring immediate viscera, which practically form the walls of the sinus, but also of infecting the general peritoneal cavity. If the enlargement of the sinus fails, there is still left a true coeliotomy and an attempt to solve the source of the persistent discharge from the sinus by intraperitoneal exploration. It is possible that a diseased tube or ovary or deepseated pus-pocket among adhesions at the bottom of Douglas's pouch, after the removal of appendages, may be the source of the discharge. This would apply, of course, chiefly to cases where the operation originally was intraperitoneal, for the removal of diseased appendages.

Munde does not believe in this method except when it is resorted to for the sole purpose of locating with the fingers in the peritoneal cavity and bimanually the exact site of the pocket from which the sinus starts, after which the peritoneal wound is closed and the operation performed extraperitoneally. In this way some deep-seated extraperitoneal abscesses can be located, as also the presence and exact site of the inflammatory exudate or suppuration in appendicitis.

### HYPODERMIC METHOD IN THE TREAT-MENT OF SYPHILIS.

WHITE (University Medical Magazine, June, 1891), after an exhaustive discussion of the title of this abstract, reaches the following conclusions:

- 1. The hypodermic treatment of syphilis has not as yet shown results which warrant its adoption as a routine method to the exclusion of or in preference to other methods, but, on the contrary, has some apparently inseparable disadvantages, and even dangers, which render it improbable that it ever will be so adopted.
- 2. The circumstances under which hypodermic medication should be employed may be summarized as follows: (a) Those cases in which other methods of treatment have been tried and failed; (b) those cases in which, owing to idiosyncrasy or intercurrent disease, the skin and the digestive tract cannot be used for the introduction of mercury; (c) those cases in which, owing to grave and advancing lesions, rapid mercurialization is absolutely necessary; (d) those cases in which obstinate localized lesions can be most directly reached by this

plan; (e) possibly those cases referred to by Julien, in which early differentiation between syphilis and malignant disease, or tubercular ulceration, is extremely important, should be included in this list. He advises employing the method in all doubtful cases which admit of it, particularly in those conditions of the tongue which often leave the surgeon for a considerable time in doubt as to their exact nature; anything which promises to shorten this period of doubt, by rendering the therapeutic test more rapid and more certain, would be of great advantage. He should, however, in such instances, feel obliged to use potassium iodide by the mouth at the same time; (f) a theoretical possibility of the employment of mercury hypodermically has suggested itself to the author, but he has not yet actually employed it. It may be that its use by this method will aid in shortening the period of doubt which often intervenes between the appearance of the primary sore and the development of general adenopathy, or of the exanthemata. If, in the presence of a sore of uncertain character, the employment of mercury hypodermically resulted in rapid cicatrization, no local treatment being employed other than cleanliness, it might occasionally throw light upon the case without being open to all the objections which attend the systematic and slower administration of mercury by the mouth. It is possible that the idea is worth a trial in exceptional cases, but White does not think it should be adopted as a routine practice.

3. As to the choice between the two great classes of mercurials, the soluble salts are to be preferred to the insoluble in the large majority of cases as more exact in the matter of dosage and much less dangerous and less likely to be followed by local disturbances. They are always to be used when there is need for rapid mercurialization.

The insoluble salts should probably be reserved for those cases in which frequent visits to the surgeon are impossible and in which no contraindications exist. In cases of defective kidneys, diabetes, profound anæmia, marked atheroma, great debility, etc., such methods are dangerous, and the case, even if urgent, will probably do better under some other form of treatment.

4. Finally, as to the special preparation to be employed. Among the soluble salts the bichloride is probably to be preferred. The results from its use are not strikingly different from those obtained from the other compounds of this class, but its stability and great solubility and its germicidal qualities seem to warrant

its selection. The disadvantage is the pain which it causes, but the evidence in this direction shows that in the hands of impartial investigators not responsible for the introduction of the particular substance employed each of the salts on the list produces a considerable amount of pain and a not inconsiderable number of accidents or complications. Probably the bichloride is freer from objectionable features, in respect especially to the production of suppuration, than any of the salts of mercury.

Among the insoluble salts, calomel and the yellow oxide are to be preferred. It would appear that the latter is a little less active, but at the same time much less irritating. Gray oil is the most available form of administering metallic mercury.

### LITHOLAPAXY IN MALE CHILDREN AND BOYS.

KEEGAN (Lancet, No. xxi., vol. i., No. 3639) states that in one year fifty-one male children were admitted to his service suffering from stone of the bladder. In only two cases was he obliged to have recourse to lateral lithotomy. In one case the stone was fixed and could not be made to fall between the blades of the lithotrite. He found on extirpating this stone a spur about one-third of an inch in length projecting from it posteriorly. This spur had become embedded in the mouth of one of the ureters and had prevented the seizing of the calculus with the lithotrite.

In the second case the stone lay partly in the bladder and partly in the prostatic urethra. In both of these lateral lithotomy was successful.

Keegan has now performed one hundred and seventy-five litholapaxies in male children and boys, and has lost four patients. Even this small mortality (three per cent.) was due to advanced kidney-disease in the subject operated upon. Together with his quota, two hundred and fifty-one litholapaxies in boys were performed in the hospital, with seven deaths, or a mortality of less than three per cent.

Freyer has performed one hundred and fifty-two litholapaxies in boys, with only two deaths; Denis, seventy-one, with three deaths; Goldsmith, fifty-two, with two deaths; Gimlette, fifty-nine, with one death; Cunningham, twenty-four, with no death; Hendley reports forty-four, with three deaths. Taking the combined figures, the total is, in three hundred and sixty-six operations, 2.71 per cent.

These results show that litholapaxy in boys is by all odds the best operation, provided the surgeon has at hand a supply of perfectly reliable and suitable instruments, and that he has

learned by experience to use them with judgment and dexterity. The chief merits that it possesses over cutting operations is that it is free from the dangers inherent in the latter, and the cure is far more rapid after litholapaxy than after lateral lithotomy. For these reasons, Freyer, who has performed one hundred and ninety-one consecutive lithotomies in boys without a death, has of late years almost abandoned the cutting operation for litholapaxy.

It is necessary in operating upon a child to extract every grain of debris from the bladder before removing him from the operating-table. Five or ten minutes spent towards the close of the operation in searching for the last particles of debris will be well and profitably employed. The points upon which Keegan especially insists in this operation are that there should be an ample supply of reliable lithotrites, all of the completely fenestrated pattern, and with canulæ with serviceable stylets. The surgeon should never withdraw a canula from the bladder, or introduce one, unless it be supplied Four ounces of water should with a stylet. be the maximum quantity allowed to be in the bladder at any given moment. The aspirator should be used gently and methodically, and water should not be injected into the bladder while the patient strains. Extreme gentleness and care are essential in practising all manipulations of instruments in the bladder and The operator should not be in a hurry to finish the operation, and if possible he should not leave a grain of debris behind in the bladder.

### GUSSENBAUER'S SACRAL OPERATION.

Abbott (*Medical Record*, vol. xlifi., No. 23) describes Gussenbauer's method of resecting the rectum.

The operation is begun by an incision of the bone in the median line from the tip of the coccyx up the sacrum for five inches. The upper extremity of this incision is then crossed by a transverse cut five inches in length. These flaps are not dissected up, the incision being carried through the coccyx and sacrum in the lines of the skin cuts, irrigation being kept up during the sawing. Thus are formed two triangular flaps of integument attached to the bone, each attached to half of the coccyx and of the three lower sacral vertebræ. are easily separated from the connective-tissue binding of the peritoneum, and are carried to either side, giving a fine view and a large field for operation upon the pelvic contents. After extirpation of the rectum is completed the healthy gut is brought down and sewed to the integument for a new anus; the bony flaps are returned to their places, being held by catgut sutures through the periosteum only, and silk sutures passed through the integument. The inter-recto-coccygeal space is tamponed with iodoform gauze and the wound dressed in the ordinary manner.

### THREE SUCCESSFUL CASES OF MYX-ŒDEMA.

STARR (Medical Record, vol. xliii., No. 23) reports three cases of myxcedema treated by the use of thyroid extract. This extract is prepared by means of glycerin. The first patient was given 6 drops three times a day, and improvement began ten days after treatment and has been progressive and continuous. Her mental condition improved to even a greater extent than her bodily state. The dose of the extract was increased until she was taking 10 drops three times a day, at which point it caused a feeling of exhaustion. The pulse was found to be over 100 and the temperature 99½° F. The dose was reduced to 8 drops. This was equivalent to ½ gland daily.

The second case was put upon 5 drops of the extract three times a day, increased gradually up to 20 drops. The improvement began three weeks after initiation of the treatment. In four months the patient was practically well, insomnia being the only symptom which persisted. This was relieved by mild doses of sulphonal and chloral. At the time of report she was still taking 30 drops of the extract three times a day.

The third patient was treated for some years for a variety of nervous symptoms due to the condition of myxædema, which had evidently been present since 1880. The onset of the disease was very slow, the only constant symptoms being the swelling of the entire body, face, and extremities, extreme pallor, with anæmia, deafness, great nervousness, excitability, with occasional periods of depression, without apparent external cause, occipital pain, albuminuria, and a peculiar scaly, dry condition of the skin, with falling of the hair. The patient was given at the onset 10 drops of the thyroid extract three times a day. Within twenty-four hours the condition had changed; the reaction was so intense as to give rise to much alarm; the temperature had risen to 103° F., the pulse 160; the dyspnœa was extreme; the mental distress Vigorous stimulation comvery alarming. bated these symptoms in twenty-four hours.

y eit id i

3

After an interval of two weeks the extract was given in 5-drop doses twice a day, and this was gradually increased to 10 drops, which was the largest dose she could take without manifest discomfort. From the time the dose reached 8 drops three times a day the improvement began to be noticeable. After four months' treatment her appearance is wholly different from the preceding six years. She no longer has the appearance of undue obesity, the natural lines of her face have become perfect, the double chin, which was large, has disappeared, the rough, scaly skin has become soft and smooth, natural perspiration is restored, and there is a perceptible new growth of hair. The supraclavicular swellings have disappeared, her speech has become almost normal, her facial expression has changed for the better, her appetite and digestion are good, the urine has increased in amount, and now contains very little albumin and only occasional casts, but much more urea. The action of the heart is regular and moderate, and there are no longer attacks of faintness and dyspnœa. The mental improvement has been equally satisfactory. all these cases the general permanent mental state resembled mild dementia. There was a lack of interest in subjects, a tendency to sit listless and unoccupied, a feeling of effort on mental exertion, and actual inability to fix the attention or to conduct a train of thought. Continuous conversation soon wearied them. and the mental weakness was very noticeable in all. All had suicidal impulses.

The thyroid extract is prepared by dissecting the glands of the sheep, together with the fascia, from the trachea. This is washed thoroughly in a saturated solution of boric acid. The fat is then dissected off, leaving the gland in its capsule, with the vessel attached. is again washed in a saturated boric-acid solution. After this solution the glands are put into a sterilized towel, and with sterilized instruments the glandular tissue is carefully cut away from the fat, from the fascia, and from the vessels, so that only glandular tissue remains. This is then weighed. Each thyroid yields from ten grains to half an ounce. Glands of very large size, probably diseased, were rejected. The glandular mass having been thus prepared, is chopped very fine, and mixed with German double-distilled glycerin, which is sterilized by heat two days before use, and allowed to stand four days. The extract thus obtained is very carefully filtered through sterilized cotton under pressure, and presents the appearance of a red syrup. It will keep for a month without presenting any evidences of

the development of micro-organisms. The amount of thyroid gland in a drachm of this extract is twenty-four grains, which is equivalent to an ordinary-sized gland. The usual dose of the extract is 30 drops daily in divided doses.

## THE TREATMENT OF CONSTITUTIONAL SYPHILIS BY EXTERNAL METHODS OF ADMINISTRATION OF MER-CURY.

SHAW-MACKENZIE (Lancet, No. 3636, 1803) strongly commends the treatment of constitutional syphilis by means of calomel fumigation. Next to this in efficiency rank mercury inunc-For this purpose the oleate of mercury should be employed, twenty per cent. strength. Fifteen grains are sufficient for the initial dose. It is cleanly, rapid in action, and one or two rubbings a week are sufficient to keep a patient gently under the action of the drug. In fumigating the patient is surrounded by a cloak, or, better still, sits in a box with only the head exposed to the air. A spirit-lamp (over which a china receptacle holding a little water and the calomel powder separately is arranged) is placed under the seat or between the patient's The wick being lighted, the calomel is sublimed, and with aqueous vapor is deposited on the patient's skin, after which the patient goes to bed, still in his cloak, or remains for an hour surrounded by a blanket. It is usual to begin with a drachm and a half of purified calomel and go up to two drachms, or reduce to one drachm, as necessary. The patient is advised to remain in-doors as much as possible, is seen once a week, and from a six weeks' to a three months' course is generally necessary, the gums being watched and the amount of calomel regulated by the effect produced. There should be no intermission of the daily or nightly bath, when the course has commenced, till all symptoms have subsided, when intermission may be The morning tepid bath gradually begun. need not be given up. It is important that the calomel should be thoroughly pure and the receptacle it sublimes from of china and not metal. With these precautions the fumes are not unpleasant; indeed, in many cases, it is desirable that they should, with limitation, be inhaled.

The advantages of the external or bath treatment are: (1) The satisfactory and safe way in which the effects of mercury may be induced and regulated; (2) the certainty of a successful result, with practical immunity from further and later serious manifestations; (3) no appreciable interference with general health or diges-

tion (the most debilitated may take the baths, and the debility of tertiary disease or phthisis does not contraindicate them); the writer has seen albuminuria and glycosuria in syphilitic subjects entirely disappear, and has known a woman to bear a full-term child who repeatedly aborted before her husband was put on a course of the baths; (4) shortening of the term of treatment; (5) the benefit of local fumigation to irritable sores and ulcers.

### A NEW ANTISEPTIC MIXTURE.

CAVAZZINI (La France Médicale, 40 année, No. 22) advises the following as an antiseptic dusting-powder:

R. Iodoform, 55 parts; Salicylic acid, 20 parts; Subnitrate of bismuth, 20 parts; Camphor, 5 parts.

This mixture makes a light yellow powder which is without disagreeable odor. It is especially efficacious in ulcerating buboes. It is an active antiseptic, hence cicatrizes and prevents undermining of the skin. Indolent granulations are quickly stimulated and suppuration rapidly disappears.

### Reviews.

APPENDICITIS AND PERITYPHLITIS. By Charles Talamon, M.D. Translated by E. P. Hurd, M.D. Detroit: George S. Davis, 1893.

The translator has rendered a distinct service to many physicians by rendering accessible to them this admirable thesis of Talamon. book opens with a brief historical and critical résumé in which the brilliant work of American authors, particularly that of Reginald Fitz, is given due credit. Indeed, it is stated that, as for the present description of the various forms of appendicitis, it is based entirely upon the result of the American methods. The existence of a typhlitis distinct from appendicitis is de-The lesions, causes, and symptoms of appendicitis are fully and clearly described, a particularly instructive chapter upon the errors of diagnosis is given, and there is a judicial discussion of the medical and surgical treatment, followed by a few words upon the operative technique. This work, though it is perhaps simply a résumé of the scattered literature of the last few years upon the subject of appendicitis, cannot be too highly praised. It bears the impress of a brilliant mind, and is destined to rank as a classic. The general practitioner should be as familiar with its teachings as he is with his best-thumbed text-book.

SYPHILIS OF THE NERVOUS SYSTEM. By W. R. Gowers, M.D.

Philadelphia: P. Blakiston, Son & Co., 1892.

This little book of one hundred and thirty-one pages consists in a reprint of Gowers's Lettsomian Lectures for 1890, delivered before the Medical Society of London. It clearly states the views of Dr. Gowers upon the relationship between syphilis and the nervous system, and while three years old, nevertheless embodies the best and most generally accepted views concerning this important part of medicine.

DISEASE IN CHILDREN. A MANUAL FOR STUDENTS AND PRACTITIONERS. By James Carmichael, M.D., F.R.C.P. Illustrated.

New York: D. Appleton & Co., 1892.

The author tells us in his preface that in writing this manual he has tried to give a precise account of the clinical features of the more common diseases of childhood, and has assumed that the reader is acquainted with general medicine and the diseases of adult life.

The book opens with a chapter upon the prevention of disease in childhood, from which it is evident that the author has kept himself in touch with the recent advances made in the study of the relation of bacteria to disease. Following this chapter is one upon school hygiene and pathology, which contains many facts of interest to those who have not kept themselves abreast of recent studies in this branch of preventive medicine.

The third chapter is upon the clinical examination of the child, while chapter four begins the discussion of the fevers, the first of which is scarlet fever. After consideration of the various infectious diseases, including pneumonia, croupous pneumonia, and tuberculosis, syphilis and scrofulosis are discussed, and then diseases of nutrition, such as anæmia and rachitis.

Following the discussion of diseases of the respiratory apparatus, there is a chapter upon lactation and artificial feeding of infants, then one upon dentition, and after this a discussion of the alimentary, genito-urinary, and lymphatic systems, a number of chapters upon nervous diseases, then a chapter upon parasitic diseases, and one upon skin-affections closes the book so far as the general text is concerned, but a useful appendix is given in which

recipes may be found for the preparation of food for children who are ill. A fairly-copious index concludes the work, which is about the size of the book by Dr. Goodhart, which has been edited in this country by Dr. Louis Starr. The work does not profess to be an exhaustive one, and, used in connection with the larger treatises on this subject, will give the medical student or practitioner all necessary information.

1, 20

800

With -

ed to

Com

12

than

OWN.

bár

clean

P IF A

B R

hos

epta.

medi-

IS AT

MD

u n

17 1

f the

125

with

life.

the

nich

fin

the

ĸ

a

101

LESSONS IN PHYSICAL DIAGNOSIS. By A. L. Loomis, A.M., M.D. Tenth edition, revised and enlarged. New York: William Wood & Co., 1893.

This book upon physical diagnosis, which has already reached its tenth edition, is still worthy of its great popularity. Perhaps one of the best points, aside from its scientific value, is the unusually large type and heavy leading, which render it easily read and studied. The illustrations are clear and the descriptions of the various physical signs lucid.

The size of the type and the heavy leading, which we have mentioned, do much towards making the book large when it is in reality, so far as the amount of material in it is concerned, rather small.

The title, "Lessons in Physical Diagnosis," shows that the author has endeavored to give the simple points which are of value in this department of medicine, and has not attempted to present a work as thorough or complete as the well-known book of Dr. Da Costa. Probably this is the best small book upon Physical Diagnosis which can be employed by the American medical student who is sufficiently patriotic to desire a book which has not a British origin.

CRÉOSOTE ET TUBERCULOSE, REVUE GÉNÉRALE. TRAITE-MENT DE LA TUBERCULOSE PULMONAIRE PAR LA CRÉ-OSOTE ADMINISTRÉE PAR VOIE RECTALE. Par le Dr. Henri Audeoud.

Genève: Imprimerie, J. Stuber, 1893.

The author of this very complete monograph of two hundred and sixty odd pages having been kind enough to send a copy to the THERAPEUTIC GAZETTE, with the request for a review, we have taken much interest in careful study of his effort, and find much to praise in the useful summary which he has given of the subject.

Practically the reader finds in this book reference to all the literature which exists concerning the use of creosote in medicine. There are chapters upon its therapeutic employment in different doses and upon its administration by the stomach, the rectum, the lungs, and hypodermically. The active principle of creosote (guaiacol) is also studied, and bacteriological and clinical notes are given in profusion.

At the end of the essay there is a careful summary of the influence which creosote exerts over the various portions of the body and upon the different symptoms which are present in tuberculosis.

Finally, the book closes with a very copious and carefully-prepared bibliography of the subject, which, unlike many European bibliographies, is gotten up with sufficient care to contain reference to the best American papers. Throughout the essay there are a number of tables showing the effects obtained by the employment of creosote by different authors in different numbers of patients.

We congratulate the author upon having produced a very valuable contribution and summary to the therapeutic literature of to-day.

THE TREATMENT OF CONSTITUTIONAL SYPHILIS. By Oswald Ziemssen, M.D.

London: H. K. Lewis, 1893.

In this brochure Ziemssen states that on account of his particularly extended observations, although he is not a specialist, he brings before his professional brethren the results of an experience which he has gained with regard to curing constitutional syphilis in the course of more than twenty-five years' practice.

He opposes Kaposi's dictum, that syphilis is the most easily curable of all constitutional diseases, with one of his own, that syphilis is not incurable. In regard to prophylaxis, he holds that excision of the stump is a valuable adjuvant of the general methods, but is absolutely valueless in preventing the constitutional symptoms from developing. He believes that general treatment should be commenced as soon as possible after the infection, and that to neglect the use of well-known remedies is simply to abandon the patient to an existence of incalculable chance. As to the diaphoretic and diuretic methods, he holds that the use of decoctions and of thermal baths may occasionally effect a cure of slight forms of the disease, but in view of frequent relapses and the weakening effect of the treatment these methods cannot be recommended. Treatment by cold water and other baths is futile. In mercury he places absolute confidence. holds that this drug has none other than a beneficial influence; that if its use sometimes appears to aggravate symptoms, it is the fault of the mode of administering it. Further, every relapse is the surest sign that the previous mercurial treatment has either been too short or too weak; the longer and the more energetically the mercurial treatment is carried out

the greater is the prospect of the patient being definitely cured.

The internal application of mercury by either the mouth or through the rectum he holds is somewhat unreliable, since the amount of absorption depends upon the condition of the gastro-intestinal tract. The introduction of mercury through the skin is, however, warmly commended. This may be accomplished either by hypodermic injection or friction. Hypodermic injection is rejected because of the pain it causes, the subsequent development of phlegmons or persistent indurations, the uncertainty of absorption, the inequality of distribution, and the difficulty in properly regulating the dosage. Inunctions represent the treatment of choice. Ziemssen holds that mercury, being very volatile in itself, when diffused in an ointment and spread on the skin, forms an atmosphere of mercury around the patient's body and enters the skin in a gaseous state. He is led to this conclusion by the fact that in all the mercury remaining on a patient's skin after the inunction is rubbed off with a sponge or cloth, without any pressure, no evidence of mercurial influence, or hardly any, is percepti-Therefore, the quantity of mercury pressed into the skin is of little importance. These inunctions are carried out by trained nurses and by means of hollow glass pestles. Each inunction must last fifteen minutes, and after the rubbing the parts are always wrapped in flannel for a certain number of hours; this flannel bandage is kept on during the night, and when it has been laid aside the patient takes a bath; the ointment is then rubbed in in some other part. The ointment of choice is that made up of-

> R. Mercury, 20 parts; Lanoline, 2 parts; Suet, 2.8 parts; Lard, 5.2 parts.

Inunction is the only treatment which allows of the dose of mercury being increased up to the maximum without endangering the patient's life. The thermal springs, in combination with mercury, are particularly serviceable, since they allow the absorption of a larger quantity of the drug, and hence permit of the treatment of syphilis by maximal doses.

In regard to the value of the test treatment by baths, this has been shown to be unreliable, since many cases at Aix-la-Chapelle, after taking the baths for five or six weeks, have been discharged as cured, and have had subsequent relapses. The iodide treatment gives only temporary amelioration, but is serviceable by its absorptive action, since it removes the hyperæsthetic changes of the tissues which have been produced by the specific microbe.

The book closes with the statement that the treatment of syphilis should be carried out, not, as is often the case, by a specialist in skindiseases, but by a practitioner whose knowledge and experience extend over the whole range of medical art.

### Correspondence.

#### MILWAUKEE LETTER.

(From our Special Correspondent.)

The Section of Ophthalmology of the American Medical Association.—The Section of Ophthalmology of the American Medical Association completed a successful and instructive session in the recent meeting at Milwaukee. Much praise is due to the able chairman, Dr. S. D. Risley, of Philadelphia, and his efficient secretary, Dr. H. Gradle, of Chicago, for their untiring efforts to bring together a number of communications that worthily take their place with those presented at previous meetings of this section, which has done its full share in advancing the best interests of American ophthalmology. An interesting feature of the occasion was the presence of Professor Zehender, who took part in some of the discussions. In the present communication only those papers can be noticed which contain distinctly therapeutic points.

After the address of the chairman, the first paper on the bulletin was by Dr. J. A. Lydston, of Chicago, Illinois, who described his method of treating pannus by digestive ferments. He reviewed the older measures, for example, trusting to the disappearance of the pannus with the subsidence of the granulations in the lids, the instillation of an infusion of jequirity, and distinctly surgical procedures, and then advised the management of trachomatous pannus with digestive ferments. uses a mixture of papoid and boric acid, making a daily application. His experiments seem to show that drug acts better in alkaline medium. He also suggests that the extract of pancreatin might be used in the same way.

Dr. C. B. Blubaugh, of Parkersburg, W. Va., advocated the removal of the granulations in trachoma with small rakes, so shaped that they not only pass freely over the exposed tarsal conjunctiva, but reach also the retrotarsal fold and the margins of the lid. He follows his

scraping process by the use of an astringent. His operation appears to be a modified form of grattage, and although he reported excellent results in numerous cases, the paper failed to be explicit in classifying the varieties of trachoma,—a point of essential importance in the advocacy of any form of treatment of this disease.

Phlyctenular ophthalmia was discussed by Dr. Dudley S. Reynolds, of Louisville, Ky., the main points in his paper being that the disease depended essentially upon malnutrition, that the local treatment was of minor importance, and that the best results were obtained by building up the nutrition, with especial attention to the alimentary canal.

Purulent ophthalmia, from the stand-point of its specific microbic origin, was discussed by Dr. A. Hind, of Chicago, Ill.; and Dr. Tiffany, of Kansas City, Mo., described the advantages of methyl-violet in various affections of the eye.

The second session was opened with a paper on quiescent foreign bodies within the eyeball, by Dr. W. B. Johnson, of Paterson, N. J., in which he described a number of cases in which foreign bodies had penetrated the vitreous chamber and had not produced symptoms of sympathetic irritation in the other eye, although long periods of time had elapsed.

This paper elicited a long discussion, the opinion being quite universal that although occasionally foreign bodies were quiescent, if reasonable efforts to extract them from the vitreous chamber were unsuccessful, the wellknown tendency of such eyes to cause sympathetic irritation in the fellow-eye demanded operative interference,—usually enucleation or one of its substitutes. Professor Zehender took part in this discussion, referring particularly to the electro-magnet for the extraction of metallic foreign bodies, and also to the experiments which have been performed with magnets of great power in removing foreign bodies from the interior of the eye simply by their attractive power, and without the introduction of a magnet point within the ocular chambers.

Dr. Gifford, of Omaha, Neb., developed the point thus introduced by Professor Zehender, advocating a more general trial of this method and an extension of the experimental inquiries on this subject which had been undertaken in Europe.

Dr. F. C. Hotz, of Chicago, Ill., reported a case of sympathetic neuritis after evisceration, and incidentally showed that the cosmetic value of evisceration was not superior to that of a well-performed enucleation, owing to the

shrinking of the stump, which invariably takes place after the performance of the former operation. He proved this point by a series of measurements made with a perimeter in the same way as the angle of strabismus is determined, and presented a table comparing the excursion made by a shell placed in a socket after enucleation and one inserted after evisceration. This table did not give evidence that the movement was greater after the latter operation.

In the discussion which followed this paper the method of performing evisceration received attention, Gifford, of Omaha, Neb., objecting to the tobacco-pouch suture, and preferring tamponment of the cavity with iodoform gauze. Reeves, of Toronto, Canada, is very careful to remove the ciliary nerves, then allows the cavity to fill with blood, after which he stitches the scleral edges together.

Dr. de Schweinitz, of Philadelphia, Pa., described a series of experiments which he had performed upon rabbits to test the value of intraocular injections of solutions of various antiseptic substances. He used in his experiments bichloride of mercury, 1 to 500, 1 to 1000, and 1 to 5000 respectively; cyanuret of mercury, 1 to 1000; trichloride of iodine, 1 to 1000; aqua chlorinata, officinal strength, and blue pyoktanin, 1 to 1000. The doses injected varied from two to five minims, and in each instance, save one of the experiments with aqua chlorinata, permanent lesions were produced in the vitreous, choroid, or retina. lesions were demonstrated by a series of microscopic slides and photo-micrographs, and the conclusion of the paper was that this experimental inquiry was in direct opposition to the adoption of this method of therapeutics, although the reporter pointed out that a similar series of experiments on dogs should be performed, inasmuch as in one instance he had succeeded in checking an acute panophthalmitis in a mongrel cur by the injection of a strong solution of bichloride of mercury directly into the vitreous.

Dr. W. H. Wilder, of Chicago, after reviewing the literature of dendritic keratitis, reported three cases of his own which he thought were analogous to those ordinarily known as herpes of the cornea, in this classification following Horner's description. He believed that some of the cases were found in people suffering from malarial poisoning, and were consequently benefited by anti-malarial treatment, but that they also depended upon febrile affections, and probably all of them upon some impairment of nutrition.

Dr. J. A. White, of Richmond, Va., who described certain ocular complications in connection with fevers, recommended in atrophy of the optic nerve after fever, large doses of strychnine given in dilute phosphoric acid. In one of his cases he used a fifth of a grain three times a day with marked benefit.

Dr. Love, of Philadelphia, Pa., read a paper on glaucoma, describing the well-known phenomena of this disease and advocating strychnine and electricity in the early stages of the simple variety of the affection.

Dr. Gifford, of Omaha, Neb., advocated posterior sclerotomy as a preliminary to some operations for glaucoma. The operation is done subconjunctivally, with a narrow Graefe cataract-knife, the incision being about one-eighth of an inch long. This allows the pressure in the vitreous to fall, deepens the anterior chamber, and permits a more successful performance of iridectomy, or whatever other operation may be indicated, lessening the dangers of greatly-increased intraocular tension.

Dr. H. Gradle, of Chicago, commented upon diseases of the lachrymal passages, and divided the cases of lachrymal disease into two classes, according to the degree of lachrymation. In the one class the eye waters when exposed to wind, dust, or eye-strain; in the second class the weeping is continuous. Sometimes the source of irritation is an intranasal anomaly; more often disease of the tear-passage itself. He believed that the difference in results in different patients depended less upon the therapeutic measure than upon the nature of the disease. He recommended electrolysis of the duct in cases of stricture in which the probe failed to enter without undue force.

Dr. Casey A. Wood, of Chicago, in discussing the treatment of nasal duct obstructions, insisted on the necessity of recognizing the exact location of the disease, and presented a series of mirrors devised for inspecting the intranasal end of the lachrymo-nasal duct. He judges of the extent of the obstruction by the ability of the duct to transmit water when it is injected through the canaliculus. For this purpose he advises a syringe with a small point and large reservoir, or else an irrigator consisting of a reservoir connected with a flexible tube, with the ordinary tip for the nasal duct, and elevated some feet above the patient. When probes are to be used, he teaches the patient to pass them for himself. He is not favorable to slitting the canaliculus if this can be avoided.

Dr. B. Alexander Randall, of Philadelphia, regards the Weiss reflex as a sign of myopia.

This curved reflex parallel and close to the nasal margin of the disk is best studied with a strong concave mirror. In his experience it has been conspicuous in cases of distending eyeball, and when he finds it he places the eyes under careful treatment, and hopes thus to prevent the further increase of myopia. It is also seen in eyeballs showing no tendency to distention, and, on the other hand, is absent in some cases of progressive myopia. Its presence, however, should always serve as an indication for careful treatment of the eyes.

Dr. A. R. Baker, of Cleveland, O., was successful in relieving temporarily by tenotomy of the external recti muscles a case of persistent spasm of accommodation, not benefited by glasses or the application of a mydriatic.

Dr. J. A. Thompson, of Kansas City, Mo, considered the operation for convergent squint one of the most difficult and uncertain in ophthalmic surgery. In the treatment of convergent squint in children glasses sometimes give relief, but rarely. When tenotomy is done, the effect of the operation should be divided between the two eyes. He favored the combination of tenotomy with advancement, but the advancement should always be capsular.

Dr. J. E. Colburn, of Chicago, described a series of cases in which, on account of inability to maintain binocular vision with comfort, the head was carried forward and backward, or to one side, with a corresponding distortion of the features. These cases often revealed squint or heterophoria, and relief was obtained by appropriate tenotomy. He called attention to the fact that the cases might be mistaken for wry-neck or spinal distortion, and consequently subjected to inappropriate treatment.

Dr. Boerne Bettman, of Chicago, described his method of artificial ripening of immature cataract, which has previously been abstracted at some length in the Therapeutic Gazette. He renewed his belief that the operation was effectual, was never followed by iritis, dislocation of the lens, or other unfavorable results, and secured prompt and complete maturity of the cataract, except in cases of sclerosed lenses.

Numerous other papers appeared upon the bulletin presenting matters of great interest in ophthalmic science, but, inasmuch as they contained no directly therapeutic points, they are not abstracted in the present letter. A very important suggestion by the chairman, Dr. Risley, of Philadelphia, that hereafter a subject should be chosen for special collective investigation, was adopted. "The Method for the Objective Measurement of Refraction" was selected as the topic.

# Therapeutic Gazette.

Whole Series, Vol. XVII. DETROIT, MICH., PA., August 15, 1893.

Third Series, Vol. IX. No. 8.

#### CONTENTS.

#### Original Communications.

Some Results in the Treatment of Epi-	
lepsy. By David Inglis, M.D	50
Lachrymal Obstruction and its Treat-	-
ment. By Charles Hermon Thomas,	
M.D	
The Early Management of Club-Foot.	30
De De Perset Willard M D	
By De Forest Willard, M.D	51
Treatment of Abortion followed by Sep-	
sis. By E. E. Montgomery, M.D	51
Enteroclysis in the Summer Diarrhoea of	
Children, with a Report of Seventy-	
eight Cases, together with the Results	
of Laboratory Investigations (con-	
cluded). By R. E. Müller, B.Sc.,	
M.D.	
The Best Methods to be resorted to in	3-
the Treatment of some Common Dis-	
eases. By H. A. Hare, M.D	54
•	

#### Leading Articles.

Additional Measures to Enteroclysis in the Treatment of Summer Diarrhoea	
of Infants	534
The Actual Cautery in the Treatment of	331
Corneal Ulcers	536
The Ultimate Results of Orchidopexy in	33
Cases of Undescended Testicle	£25
The Alexander of the Control of the	331
The Abuse of Medical Confidence	537

## Reports on Therapeutic Progress.

The Action of Oleic Creosote	
the Treatment of Pneumonia	E28
Treatment of Lead Colic by Large Doses	-
of Olive Oil	539 539

· Opium-Poisoning in Opium-Smokers	530
The Physiological Actions of Apocodeine The Antipyretic Action of Guaiacol lo-	E40
The Antinumetic Action of Gueincol lo-	340
ally applied	
carry applied	540
cally applied	
of Diphtheria	540
Strychnine in Snake-Bite,	548
Strychnine in Snake-Bite The Nitro-Hydrochloric Acid Bath in	
the Treatment of Chronic Liver Cases	542
Animal Extracts as Therapeutic Agents	543
The Hamilton Acute I neumonia	545
ine rispodernic injections of Phos-	_
_phate of Sodium	546
The Prophylactic Treatment of Scarlet	
Fever	546
The Physiological Treatment of Diseases	
of the Heart	549
Irrigations	550
Is the Beth Treatment of Infectious Dis-	230
The Hypodermic Injections of Phosphate of Sodium The Prophylactic Treatment of Scarlet Fever. The Physiological Treatment of Diseases of the Heart. Irigations. Is the Bath Treatment of Infectious Diseases of the Heart Infections Diseases of the Modern Lieux.	
eases in Accord with Modern Ideas? The Action of Bichloride of Mercury on	55¤
The Action of Bichloride of Mercury on	
the Blood-Corpuscles	558
The Abandonment of Iridectomy in the	
Extraction of Hard Cataract	553
Tearing (Discission) of Opaque and	
Crumpled Posterior Cansule and its	
Diale	4
Risks	554
Tearing (Discission) of Opaque and Crumpled Posterior Capsule, and its Risks	554
Risks	554 556
Risks. The Combined Method of Cataract Extraction. Notes on Cataract Extraction	554 556 557
Notes on Cataract Extraction	550 557
traction	550 557
traction	550 557 561 562 562
traction	550 557
traction	550 557 561 562 562 562 562
traction	550 557 561 562 562
traction	550 557 561 562 562 563
traction	550 557 561 562 562 563
traction	550 557 561 562 562 563 563 564 564
traction	550 557 561 562 562 563
traction	550 557 561 562 562 563 563 564 564
traction	550 557 561 562 562 562 563 564 564 564
traction	550 557 561 562 562 563 563 564 564
traction	550 557 561 562 562 563 564 564 564 564
traction	550 557 561 562 562 563 564 564 564 564 565
traction	550 557 561 562 562 563 564 564 564 564 565

PAGE
The Reciprocal Effects of Pregnancy and
Childbirth on the Operation for short-
ening the Broad Ligament 565 The Treatment of Eclampsia 565
The Treatment of Glandular Endome-
tritis of the Cervix 566
Ovariotomy in Infants 566
Calomel Soap in the Treatment of Syphilis 566 The Micro-Organism of Soft Chancre 566
The Treatment of Freckles 567
The Treatment of Alopecia with Fasence
of Wintergreen 567
The Value of Welander's Abortive Treat-
ment of Buboes 568
The Collodion Iodide in the Treatment
of Seborrhoea of the Scalp 568
The Treatment of Uterine Fibromata with Chloride of Zinc
The Electrical Treatment of Uterine
Fibromata 560
The Superiority of a Laparotomy over
Vaginal Hysterectomy in Cases of Pelvic Suppuration 569
Report of Twenty Cases of Symphyse-
Report of Twenty Cases of Symphyse- otomy
The Curative Effect of Laparotomy in
Tuberculosis of the Peritoneum 570 Herzfeld's Technique for Total Extirpa-
tion of the Uterus rao
The Transplantation of Large Flans of
Skin
Amoutation of the Leg
Amputation of the Leg
of Granular Lids 574
Periorbital Incision in Glaucoma 574
Reviews 571

## Correspondence.

Berlin Letter	575
Clinical Note on Cocillana	576

## Original Communications.

SOME RESULTS IN THE TREATMENT OF EPILEPSY.

READ BEFORE THE MICHIGAN STATE MEDICAL SOCIETY, MAY, 1893.

By DAVID INGLIS, M.D.,

Professor of Nervous and Mental Diseases, Detroit College of Medicine.

A FEW days ago a medical friend jokingly said, "You neurologists see a lot of very interesting cases, but you can't do anything for them." My friend was a surgeon and has a surgeon's materialistic turn of mind. The immediate results of a surgical operation appeal

very strongly to many minds, and with the phenomenal advance which surgery has made in the past twenty years there has spread through the profession a distrust of medicine and a scepticism in regard to any but surgical or mechanical methods. Nevertheless, it remains true that all the physiological processes of the body, every function whose wrong action makes the physician necessary at all,—every one of these consists in dynamic activities which are not mechanical, which elude all surgical procedures, which even the microscope cannot make visible. When surgery shall have won its final victories, there will remain still the whole field of deranged physiological activity for the study of the therapeutist.

If we plain physicians cannot bring about results fully as successful and as permanent as those accomplished by the surgeon, we ought to take in our shingles and take up with more productive labor.

The present tendency to surgical or mechanical methods of treatment is simply the swing of the pendulum of professional opinion to its extreme divergence. Hence result many useless operations both in brain and abdominal surgery,—operations neither justified by the symptoms previous to operation or the results after it. There is abundant evidence that the more careful and judicious surgeons as well as physicians recognize this, and we may believe that professional opinion is beginning to return to the line of true therapeutics.

On the other extreme we find the physicians who fall into routine ways of drugging their patients. Here again just as disastrous results follow as from unwarranted operations.

The following cases illustrate both the disastrous effects of unwise routine treatment and the positive results which careful medicinal and hygienic treatment can effect.

I have chosen epilepsy because it is of frequent occurrence, and in no form of nervous disease do routine methods of treatment more uniformly prevail.

The particular routine treatment is that by bromides. That it should be so is not to be wondered at, for the text-books, with great uniformity, give the bromide treatment, and allude to any other treatment as purely secondary. The impression which the reader gets is that the other matters of treatment are of little value, hardly worth mentioning.

For example, Starr, in his "Familiar Forms of Nervous Disease," says, "The chief reliance in the treatment of epilepsy must be in the use of the bromides." He then mentions tincture of simulo with scant approbation. States that "antifebrin has been tried in a number of cases without any favorable result."

He advises inhalations of nitrite of amyl and nitro-glycerin, or codeine given with the bromides and chloral. This completes the therapeutic resources in a work published in 1891!

Hare, in his hand-book on epilepsy, is more generous. He notices digitalis and belladonna, but practically considers them simply as adjuvants to the bromide treatment. Cannabis indica meets with his endorsement. Opium he condemns, and justly. Zinc he has no confidence in, nor has he in nitrate of silver. He speaks in more positive terms of the value of antifebrin or antipyrin than of any other drug, except the bromides, but his main reliance is

the bromides. I think any reader of Hare would naturally put his whole faith in bromides. He puts it this way, "There is no other drug known which can be relied on so absolutely or which is so powerful in its action and devoid of marked toxic effect, unless given in enormous doses," as the bromides.

The general practitioner, then, is well justified in going straight on with the bromides; and yet I venture the assertion that the routine use of the bromides has been as disastrous to many patients as the unchecked progress of their epilepsy could have been. I believe, further, that the bromides, as commonly used, are even worse than the disease. No one has died suddenly of bromide-poisoning, but that the bromides have toxic effects is, unfortunately, too evident.

To illustrate: On December 30, 1891, I was consulted by J. K., aged thirty years; married five years previously; a well-to-do merchant; of excellent physical development and undoubted good habits of life.

In February, 1887, the first convulsion occurred, followed at long intervals by three Three years ago, however, he began to have what his family knew as "dazed spells,"—periods of transient unconsciousness, -during which his conduct was irrational, and he certainly had delusions, evidently attacks of petit mal. These occurred with varying frequency for three years, but steadily increased in number until, when he came under my care, he was having them every day, and often several times a day. When he came to me he had almost complete loss of sexual power, and his mental state was that which made the most serious feature in his condition. His memory was utterly unreliable and his mental processes sluggish. He had been obliged to wholly abandon any attempt to conduct his business affairs. He had been steadily under treatment, first under physicians in the vicinity of his home and later under specialists in Chicago, and, so far as I could learn, the treatment was that of the bromides first, last, and When the loss of memory had all the time. become so profound he went to Chicago, and was told by his physician to continue the same bromide mixture. I should have mentioned that the patient was tormented by profuse or, as he termed them, "drowning" night-sweats and nocturnal tremor.

The case seemed to me one of "marked toxic effect" of bromides. The patient was ordered to stop bromides absolutely, put upon atropine,  $\frac{1}{120}$  grain t. i. d., and given 3 grains of chloral hydrate at bedtime. Ten days later I

noted "no spell in last eight days;" "no night-sweats." This plan was continued until the end of March, when quinine in tonic doses was added. The friends of the patient were well pleased with the general progress of the case, although attacks of petit mal recurred at intervals of from six to ten days. The treatment, varied to suit the exigencies, consisted essentially in atropine and tonics, but no bromides, except on one occasion, when potassium bromide, 15 grains, and chloral, 5 grains, were given for a few doses to control headache. Fluid extract of cimicifuga had no effect on the attacks of petit mal, but caused severe headaches.

In July, 1891, seven months after he began treatment, I first put him upon antifebrin. Up to this time the petit mal kept along with a frequency much less, to be sure, than while he was saturated with bromides, but still discouraging in their persistence, about once a week.

The subsequent course of the affair was much more gratifying. The intervals began to grow longer, the memory to return decidedly, and I can report to-day that the patient has had no spell since November 21, 1891. He has resumed full control and responsibility in his business; his memory is perfect, except that there is a period in his life (that of bromide intoxication) of which he has no recollection. The treatment has been that started nearly two years ago,—that is to say, he has kept up steadily either antifebrin alone or with phenacetin. He now takes a small dose of antifebrin and phenacetin twice a day.

Such a case demonstrates two things: first, that bromides have "marked toxic effects," and, second, that medical therapeutics are as efficient as surgical.

Here is another, kindly sent to me by Dr. McKenzie, of Essex, Ontario: Young married man, aged thirty; foreman in a mill; of good habits and good heredity; began by having an epileptic convulsion in bed, October 21, 1888. He had been felled by the blow of an axe upon his forehead twelve years before the first fit. He had also "lived with a headache in both temples" for some three years before the first fit. The convulsions recurred at intervals varying from ten to four months. Here, again, as in the last case, attacks of petit mal came on, during which the patient wandered off to considerable distances, the unconsciousness evidently lasting half an hour or more. The mental failure, although not so profound as in the first case described, was cause of concern. An abundant bromide acne corroborated the patient's account of steady use of bromides, and the progressive frequency of the spells showed the inefficiency of the routine treatment.

The bromides were at once discontinued and patient put upon arsenic and fluid extract of cimicifuga with considerable benefit, due, as I now believe, chiefly to cessation of bromides.

In August, 1891, he was put upon phenacetin and salol, after which the improvement became well marked. I lost track of him until March 6, 1893, when he turned up again with this history. He had kept himself supplied with his capsules, and had gone some eighteen months without a severe convulsion and with only a rare and very transient spell of petit mal, so that he became confident, stopped medication, and a day or two before he came to see me had a fit. He is now ready to go on with his phenacetin.

The case, while not as marked an illustration of the ill effect of bromides as No. 1, shows this: That fully as good results were obtained by antifebrin and phenacetin as the most ardent supporter of the bromide plan would claim.

In August, 1892, a young business-man was referred to me by my friend Dr. Burr, of the Eastern District Asylum. He gave a history of having been obliged to abandon business, of having spent two thousand four hundred dollars in a long visit to California in search of health, and returned to Detroit, both himself and friends utterly discouraged.

He had frequent epileptic attacks, as many as three a day, during which he became wholly unconscious. In falling he fell forward, and the right side stiffened more than the left.

The most serious phase of his trouble, however, was his mental state. He had become forgetful and mentally inert to a degree which quite precluded him from attending to his business. Besides this, he was becoming ugly, so that his wife needed to avoid crossing him in any way. Corresponding with this mental state, his facial expression was almost nil; ptosis well marked; face suffused. The man's whole appearance and demeanor, his mode of speech and gait, as well as the history given, joined to make a complete picture of a nervous system rapidly degenerating. The prognosis was given as very doubtful.

A feature in the case, of which the patient himself made more complaint than of anything else, was a troublesome dyspepsia.

He brought a history as usual of bromides and also iodides.

What is the result to-day? I received a check from him on May 5, 1893, and on the back of the bill this pleasant endorsement: "I'm too busy to come and see you, but am

able to sign checks." In brief, the young man is hard at work in his old business; has set up housekeeping; his facial expression is that of an active, interested man; he has had no convulsion since September, 1892.

Guided by previous experience, he was ordered at my first visit to discontinue his bromides, and was put upon salol and phenacetin, which he has continued in lessened doses up to the present time, although now he takes a capsule only at irregular times. He judges by his own sensations: a headache, a fulness over the eyes, or a little increase of nervous irritability, he takes a few capsules.

I have given these cases because in each one a long enough trial has been made to demonstrate that the action of these drugs is permanently beneficial, and also to demonstrate that the steady continuance of the drug is not harmful. There is no such wretched effect upon the mental state as is produced by the bromides.

I could add to the list many cases in which I have given these drugs for shorter periods. These cases might not satisfy my hearers, on account of the comparatively brief duration of the term of freedom from convulsion. At the same time this experience has satisfied me thoroughly of the practical efficiency of antifebrin and its analogues. One case will illustrate the grounds of my belief.

Mrs. K. T. was referred to me by Dr. J. H. Carstens. She had been sent to him in the hope that her epilepsy could be cured by removal of her ovaries. Dr. Carstens refused to operate because he could not satisfy himself that there was a connection between the state of the ovaries and the nervous disorder clear enough to warrant the operation. The fits had been going on for fourteen years. When she came to me she had attacks of petit mal from one to three times a day. This case was at once put upon antifebrin and phenacetin. Improvement was prompt. She remained in the city some six weeks, and then felt so much better and more confident that she returned home and resumed her domestic activities. The last report I had from her was that she was well, except that about once a month she still has an instantaneous "flash of unconsciousness."

Surgery could hardly have done better, yet such cases as this have been the warrant for many an ovariotomy.

To sum up: I believe that the routine use of bromides does serious harm. That it is a serious mistake to go doggedly on with bromides in any case in which the attacks of grand mal, but more especially of petit mal, persist or increase in frequency while the patient is taking bromides.

I believe that bromides should be given in full doses to begin with, so that if they are to prove of benefit in a given case the good effect will be promptly shown. The dose should then be diminished, and always carefully watched. Failure of memory, mental torpor, change of character, are worse things than an occasional nervous explosion, and when the toxic effects of the bromides first appear, the use of the drug ought to be stopped at once.

I believe that we have in antifebrin and its analogues a group of remedies which form efficient substitutes for the bromides. They can be given for long periods with marked benefit, and their use is without any deleterious effect upon the mental state. This alone gives them an immense advantage over the bromides. One precaution, however, must be observed. The drugs need not be given in large doses, but there are persons on whose circulatory apparatus even moderate doses exercise a depressing effect. Such cases are not fit for the antifebrin treatment.

That the antifebrin group has a profound power over the cerebro-spinal axis is demonstrated by the effect which we so well know upon reducing temperature. My experience with this class of remedies in diabetes has corroborated my reliance upon them, and certainly the experience upon which this paper is based goes far to prove that prompt and thoroughly satisfactory effects in controlling the epileptic explosion can be expected.

LACHRYMAL OBSTRUCTION AND ITS TREATMENT.

RRAD BEFORE THE PHILADELPRIA COUNTY MEDICAL SOCIETY, June 14, 1893.

BY CHARLES HERMON THOMAS, M.D.

THE proper performance of the function of drainage is indispensable to the health of the eye. Interruption in the exercise of this function becomes a source of discomfort or danger, with results varying from simple lachrymation to abscess, fistula, or at times destructive disease of the eye itself. Such interruption, when it occurs, therefore, demands careful consideration and efficient treatment.

Beginning at the puncta lachrymalia, the starting-point of the lachrymal drainage system, there are certain points at which, chiefly for anatomical reasons, obstruction is most apt to occur. These points are: 1, the puncta and

canaliculi; 2, the point of junction of the lachrymal sac and nasal duct,—by far the most common of all; and, 3, rarely, the termination of the nasal duct in the nose.

Disease or displacement of the puncta may give rise to an overflow of the tears, the result of a faulty mechanical relation of the channel entrance with the front of the eye. In this respect the lower punctum is of greater importance than its fellow, owing to the gravitation of the tears.

Two abnormalities of the puncta are met with,—displacement and, much more rarely, obliteration.

Normally in close apposition with the eyeball, the puncta may be displaced as the result of chronic disease of the margin of the lid leading to displacement of the lid, as a whole, from ectropium and entropium, and indeed from any condition which mechanically draws or allows the lid to fall away from the globe. A temporary displacement is occasionally produced by acute inflammation of the conjunctiva, with attendant swelling, forcing the lid away from its proper position.

Displacement of the puncta may occasionally be remedied by treatment directed to the condition originally causing the malposition. Thus, if the displacement be due to entropium or ectropium, relief of such a condition tends to restore the punctum to its normal position. Usually in displaced puncta, however, direct surgical interference is necessary. This consists in artificially restoring the communication between the conjunctival sac and the canaliculus by slitting the latter to a greater or less extent, care being taken to make the slit towards the inner margin of the lid, so as to bring the new entrance in contact with the globe. In some cases all that is required is to enlarge the punctum in an antero-posterior direction; in others, it is necessary to slit the canaliculus throughout its entire length. The wound thus made should be kept from reuniting by probing for a

Obliteration of the puncta is observed occasionally as the result of traumatism or disease; very rarely are they congenitally absent. In all such cases an effort is to be made to reach the canaliculus *de novo*, and the lumen having been found, the canaliculus is to be laid open, as before described.

In the majority of cases of lachrymal obstruction it is to be emphasized, that the immediate source of mischief is found within the canal below the sac, at the point of junction of the sac and duct. The obstruction at this point is most commonly due, in the first stage, to thickening of the membranous canal—which is normally narrowed there—from congestion or inflammation of the duct. The inflammation in many, perhaps most, cases is consecutive to disease within the nasal fossæ, in others it follows some form of conjunctivitis; the lachrymal canal being open at both ends, offers a ready means of invasion by pathogenic organisms from the nasal cavity and from the conjunctival sac.

The results of obstruction to the escape of the tears are various, the most serious usually being inflammation of the lachrymal sac, dacryocystitis. Abscess of the sac occasionally occurs, and this at times results in a permanent fistula, or the inflammatory process may be less violent, appearing as a chronic mucocele, subject to acute exacerbations.

Lachrymation with regurgitation of a small amount of clear fluid occasionally accompanies acute rhinorrhœa, dependent upon swelling of. the soft parts within the bony canal, causing obstruction; in such a case the swelling may subside and the obstruction vanish, or the inflammation may become chronic and result in a permanent stricture. The diagnosis of obstruction below the sac is made by exerting pressure over the region of the sac and noting whether regurgitation of fluid takes place into the eve through the puncta. If such is the case, obstruction is shown to exist somewhere in the course of the drainage system below the sac; otherwise the pressure would force its contents onward through the duct into the nose. gurgitation of pus, when it occurs, is usually indicative, if not pathognomonic, of organic stricture, which, as has been said, will usually be found at the junction of the sac and duct.

Epiphora, it should be borne in mind, is not always a sign of obstruction. True it is that lachrymation commonly results from obstruction, but in rare instances the overflow is due to hypersecretion from disease of the lachrymal gland, or to an irritation affecting the nasal mucous membrane, or it may be from inflammatory disease of the eye.

The retention of tears in the conjunctival sac is in itself a source of irritation and not infrequently productive of inflammations of considerable severity. The presence of pus due to regurgitation, however, is a source of much greater disturbance, at times leading to infection of the cornea, resulting in ulcer, abscess, or pannus, and rendering operations on the eye especially hazardous.

In an important group of cases the lachrymal obstruction is due to and kept up by intranasal disease, and in these treatment of the

naso-pharynx must precede any operative measures on the passage from above.

Such success has, particularly in recent times, attended the nasal treatment of this disorder that in practice it has become necessary to draw a line between those cases of epiphora which ciation, I described a method of internal stricturotomy, based upon that of Stilling, with a knife devised by me for that purpose. This stricturotome is a combined conical dilator and knife with a long flexible shank. The conical tip serves as an explorer, guide, and



properly fall within the province of the ophthalmologist as distinguished from those falling within the province of the rhinologist. To the latter belong those cases, especially recent ones, coming on in the course of catarrh or accompanying the various forms of rhinitis with regurgitation of tears, mingled, perhaps, with flocculi of mucus, and all cases showing signs of obstruction of the nares. In short, every case of epiphora presenting symptoms of any nasal affection whatever should be subjected to rhinoscopic examination. To the ophthalmologist are to be assigned those cases of epiphora due to organic stricture of whatever origin, and which are usually characterized by Where, in recent cases, regurgitation of pus. there is reason to believe that the obstruction is caused by simple swelling, and organic stricture has not yet formed, as is more certainly ascertained if injections through the puncta can be made to reach the nose and pharynx, we may occasionally succeed in giving relief without operation, by constitutional treatment, reinforced by local counter-irritation over the sac, as by iodine paint applied between the canthus and the bridge of the nose.

In acute dacryocystitis the lower canaliculus should be laid open, and at the same time an opening is to be made in the wall of the sac sufficiently large to allow free drainage of its contents. *Poulticing should be avoided*, inviting, as it does, the formation of pus and encouraging its evacuation through the cheek, with danger of a permanent fistula.

The usual method of treating lachrymal obstruction within the duct heretofore practised has been by probing. The text-books describe this method at length, and hardly accord more than passing mention to any other. This method, it should be said, requires an indefinite length of time, is trying to both patient and surgeon, and is notoriously unsatisfactory in its results, recurrence being the rule almost as soon as the probing is omitted.

In a paper read before the Ophthalmic Section of the American Medical Association in 1802, and published in the journal of the Asso-

dilator for the knife of which it is the prolongation, and also serves as a protector to the soft parts during the introduction and withdrawal of the instrument. It is to be borne in mind that in all manipulations within the canal great care must be exercised—just as in the treatment of stricture of the urethra—to avoid making a false passage.

The first step in operating consists in slitting the canaliculus, usually the lower. This can be most readily done with a small grooved director and Beer's knife. I have recently had made a modification in this knife in which the edge of the blade is ground down parallel with the back, beginning about one-quarter of an inch back from the point, the angular extremity only being sharpened. In making the incision two points are to be particularly observed: the cut should be made along the inner edge of the margin of the lid, by causing the edge of the knife to be directed somewhat backward towards the globe, in order that the groove may be favorably located to receive the tears; secondly, the opening into the sac must be made sufficiently large to permit the ready and free introduction of the necessary instruments and to insure an ample outlet for the tears. result may be best accomplished with the point of the knife cutting in an upward direction before withdrawing the director. An obstructing ledge of tissue is usually found at the inner extremity of the groove formed by the floor of the canaliculus, and which offers an impediment to the passage of instruments and even of the tears. This obstruction is to be divided later by the stricturotome during its withdrawal at the close of the operation.

A curved probe is now to be introduced with its concavity outward as well as forward, and the location and calibre of the stricture determined.\*

The probe being withdrawn, is replaced by the stricturotome, well oiled, special care being

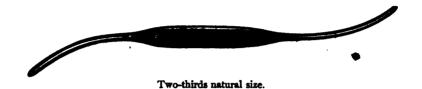
<sup>\*</sup> Bowman's probes are much improved by being furnished with conical tips. Where smaller sizes than five millimetres in circumference are required, the bulbous probes of Williams, of Boston, should be used.

taken to place the point of the instrument within the grasp of the stricture, when gentle, continuous pressure is to be made, the cone and blade being carried through and beyond the coarctation. Extreme delicacy and patience should be exercised, and more than one sitting may be required to complete this stage of the operation.

The incision is made by a drawing movement upward, completely dividing the tissues at the strictured point, even to the bone, and in at least two different directions. There is usually

So entirely satisfactory have been the results of treatment by this method during an experience with it of more than twenty years, that I feel warranted in stating my belief that stricturotomy is worthy to be substituted for all other instrumental procedures now in use for the treatment of stricture of the lachrymal duct.

In connection with this operation I wish to show a set of leaden lachrymal sounds. These



but slight bleeding, and, especially with cocaine, the pain is inconsiderable. Except in young children, it is not necessary to employ an anæsthetic.

The after-treatment consists in the introduction of a large leaden style, eight to ten millimetres in circumference, inserted at once after division of the stricture. The upper extremity of the style is bent at a right angle, and so reduced in size as to drop into the groove formed by the divided lower canaliculus, where it lies concealed. This is removed at first every day or two to allow the passage to be washed. At the end of a few weeks the style may be left out.

The use of the style is, however, not essential; thorough division of the coarctations may alone suffice; but experience in after-treatment, with and without the style, leads me to believe that while success is likely to attend both methods, the use of the style is, on the whole, to be preferred.

A case of obstruction treated by incision and the use of the style ordinarily recovers at once. The style may be worn for a few weeks more or less, but this is a matter of indifference to the patient, who is not aware of its presence when it is properly in place. Probing for purposes of dilatation is never required after a successful operation.

The advantage of stricturotomy over long-continued probing, as also over divulsion by extremely large probes, which is occasionally practised, both of which, at best, demand prolonged and painful treatment, is that stricturotomy promises immediate and permanent relief with the minimum of pain and discomfort to the patient and of trouble and annoyance to the surgeon.

sounds are intended for use in connection with lachrymal stricturotomy as explorers and pilots, -explorers as to the result of the operation, and as pilots for the introduction of the style. They are made of lead, rendering them sufficiently flexible to adapt themselves, to a certain extent, to the conformation of the canal, and so furnish an index as to the proper curvature and direction to be given to the style. are provided with conical tips of the form which has been found so useful in steel urethral sounds, favoring their safe and easy introduction, and are readily controllable by reason of the sufficient handle. They are made in four sizes, seven, eight, nine, and ten millimetres in circumference. A sound larger than ten millimetres is never required, and this is not so large as to endanger the bony walls by reason of its size.

#### THE EARLY MANAGEMENT OF CLUB-FOOT.

By De Forest Willard, M.D., Philadelphia, Pa., Surgeon to the Presbyterian Hospital and Clinical Professor of Orthopsedic Surgery at the University of Pennsylvania.

WILL utilize the half-dozen babies before you to-day, not only to demonstrate the different methods that may be employed for the rectification of congenital talipes, but to especially enforce the fact that the proper time for commencing the treatment of congenital clubfoot is the very day of birth.

There seems to be such a wide-spread impression, even among well-educated members of the profession, that treatment should be delayed, that it is no uncommon thing to find that a child has been permitted to remain months,

or even years, unassisted. The recommendation of a physician to "wait until the child is older" frequently results in false security and permanent deformity. If any physician has been able to show benefit from this waitingplan of treatment I should be most happy to learn the results.

A few moments' consideration will, I am sure, convince any practitioner that the first few weeks of life are the ones in which the tarsal bones are most soft and pliable, and more adaptable than at any other period of existence. Their growth during this period is far more rapid than at any subsequent space of time. Why they should be permitted to develop into permanent misshapen structures is beyond my comprehension, when slight force in the direction of rectification will rapidly adapt these bones to their proper relations.

I want to use these cases particularly as a test to enforce the point that the time for beginning the treatment of congenital club-foot is at the hour of birth; that if so commenced the results will in many cases dispense with operation, and in all cases the feet will be more flexible, elastic, and infinitely more useful than those which are permitted to go untreated. Naturally the parental mind shrinks from inflicting pain upon its offspring, particularly when it is anticipated that operative interference will be demanded, an operation to many individuals being synonymous with an amputation or some other terrible mutilation.

If the deformed foot of a babe is placed in a straight position and fixed there for months, the chances are that the bones and ligaments will be developed infinitely better than if it were allowed to distort for the first six months of life. Not that I argue for such fixation treatment, since it would result in great loss of muscular power; and yet, as I have said, the ultimate result would probably be better than with no treatment at all. We know that infants, even when rigidly strapped and bound down, as is done among some aboriginal tribes, develop in spite of the maltreatment.

Such permanent fixation, however, is entirely unnecessary, and I only wish to emphasize the fact that the foot must be made to grow into its natural position day by day, and that such a method can be easily secured by any practitioner by the simplest of measures. If the physician will bear in mind that very little force is required to rectify cases of infantile club-foot in the first week of life, and that the least pressure rectifies, he will certainly possess mechanical genius enough to maintain the foot in the corrected position.

A baby neglected for three months, with the weight of the clothing pressing upon its inturned foot, will have such alterations in the form of the tarsal bones that no subsequent treatment will be able absolutely to atone for this delay.

In all of the cases before you, none over three months of age, the astragalus is twisted and the distorted bone does not articulate properly. In two of the cases the cuboid also is prominent; the ligaments upon the outer side of the tarsus are lengthened, while those upon the inner side are correspondingly shortened. Maintained more or less in the straight position, the proper relation of the parts would have been established and proper growth insured.

An examination of this child, barely two weeks of age, will convince you that very slight pressure is required to bring the foot into fairly good position.

Of all curative measures manipulation stands first. When properly applied it possesses the power of cure in the majority of cases of infantile club-foot, provided it can be commenced at birth. Unfortunately, however, it requires an amount of patience and intelligence which is possessed by few mothers, even where they have the time to properly attend to it. Among the wealthy it may be delegated to nurses; it is even then impracticable. In certain cases it is entirely feasible to maintain this hand correction day and night for a year. Among the poor it is impossible. In a modified degree, however, it can be applied in all cases, and the method is curative just in proportion to the amount of time and skill given to it. In all cases, therefore, it should be insisted upon to its full extent. Even if it does not end in absolute correction of the deformity, it secures a good and flexible foot.

In the selection of various forms of retentive apparatus, the kind that will admit of manipulation while the apparatus is in situ is the one to be selected. Among the poorer classes, -in fact, among all classes,—the apparatus that requires the least expenditure of time and trouble will be the most successful. Even when the right retentive apparatus is employed, manipulation should always be practised at every dressing. Rectification, to the degree of rendering the individual plantigrade, is not important until the child reaches the walking age; hence these eight or ten months can be well spent in applying simple measures. The importance of this treatment will be at once appreciated when it is remembered that the shape attained by the tarsal bones during these months is lasting.

Here is a child, six weeks of age, with both feet so deformed that the first toes can be easily placed against the inner side of the leg, yet one pound of pressure is sufficient to straighten the foot. All of you, I am sure, will agree with me that if this foot could be held in position simply by pressure of one finger, the chances for the proper development of the tarsal bones would be far more favorable than in the distorted position.

In the second case the varus can be entirely corrected and the equinus almost so. In this case the deformity is greatest at the mediotarsal joint,—that is, at the calcaneo-cuboid and the astragalo-scaphoid articulations. The loss of muscular power for the proper maintenance of this new position renders it necessary that some artificial means of rectification shall be employed.

Given a definite idea of the object to be obtained, it only remains for us to decide upon the method to be pursued.

For the one case I take a piece of sole-leather and cut it roughly into the shape of a bulky letter L. I throw it into water, and as soon as it is thoroughly moistened I mould the upright portion of it to the leg, and the horizontal part to the inner side of the foot, as this is a case of varus. I cut out a V-shaped piece, in order that it may adapt itself more nicely to the heel. I bind this in place with a muslin bandage. When hardened, it will retain its place and keep the foot in good position. If it slips off, I use adhesive-plaster strips.

The great difficulty in the application of any apparatus is the undeveloped heel of a young child. As the circumference of the foot is usually less than that of the leg, the absence of this projection of the foot makes it exceedingly difficult to maintain any splint or device or apparatus in position. All appliances are open to the same objections. They all become soiled with urine, and they interfere more or less with proper muscular action; but we must take the lesser of two evils. A little care and cleanliness will prevent excoriations.

On the other foot of the same child I mould, for comparison, a similarly shaped piece of thick binder's board. The next child has an almost similar condition of feet.

I speak first of these simple measures in order to show that the means of correction are at hand with any practitioner in any part of the country, and it is to be hoped that in all cases of club-foot immediate treatment will be commenced directly after birth. A very suitable wooden splint is made by nailing together, in the shape of a letter L, two pieces of board of

the width of the foot. This talivert, when padded and fastened to the foot by adhesive plaster, or by a bandage, and the leg portion brought around and fastened behind the calf by adhesive strips, gives an immediate corrective force. Such an appliance certainly is within the reach of any one. Care must be taken to prevent excoriation. Sheet-lead, sheet-zinc, or sheet-tin are also cheap, and are to be found in every place. Card-board, stiff felt, or hatter's felt, can be easily shaped and moulded by water or by heat.

Where the patient is at a distance from the practitioner, and the dressings cannot be watched, better results will be obtained by plaster of Paris, carrying the bandage along the outside of the tarsus and then fixing it around the leg. Strips of adhesive plaster, carried in the same direction, you will at once see will accomplish the result desired, and there will then be no danger of slipping. A partial objection to such a procedure would at once suggest itself to your minds,-viz., that the bandage would soon be wet by urine, and would require careful watching lest excoriation occur. The dressing, however, is easily changed, and can be again applied by an intelligent mother or nurse. Another objection to its use is that while it produces lateral traction upon the shortened tendons, there is no forward stretching, which would be preferable.

There is really but little contraction of the gastrocnemius and soleus, or of the tibialis anticus; but these muscles, from their want of proper resistance by their natural opponents, the peroneals, have become gradually shortened on the one side, while from the paralysis and constant weakening of the fibres they have become elongated on the other.

It is difficult to restore tone to the relaxed muscles, as the paralysis is frequently more or less permanent on account of intrauterine nerve-changes. Both conditions must be borne in mind during treatment, since mechanical correction alone is entirely insufficient to give the necessary power to maintain the proper position. It is of prime importance, therefore, that, in addition to mechanical measures, the muscles shall be developed by massage, electricity, friction, etc., while stretching of the contracted muscles, ligaments, and fasciæ will be also necessary. What we fail to accomplish mechanically in the second part of the treatment can easily be secured surgically; hence I place the development of power in the paralyzed muscle first.

As we look at these feet, I think each one of you can suggest some method by which they can be retained in better position. By giving any one of you a simple bandage, I think you would at once, by wetting the initial end and placing it over the head of the metatarsal bone, and then carrying it beneath the foot for one or two turns, easily see in the process a power of rectifying this deformity by simple pressure.

To this child I apply a posterior troughshaped felt splint made for this purpose, holding it in position by strips of adhesive plaster.

For the fourth case, which is a patient living in the country, I apply to the foot and leg a plaster-of-Paris dressing. The foot is first enveloped in a flannel roller, and the method of application is important. Starting at the ball of the toe with the bandage, it runs underneath the foot and completely encircles it, then passes over the outer side of the tarsus, thence to the inner malleolus, around the leg, and returns like a figure of 8. To a large degree the direction of the bandage rectifies the deformity, if the surgeon is accustomed to this work. Plaster of Paris can be applied over this bandage, running in the same direction and thoroughly fixing the foot, while the toes of the child are firmly held in position. Gypsum constitutes so important a part of dressings at the present time, not only in deformities, but in fractures and other conditions, that the physician should keep this material constantly on hand. A good quality of dental plaster is cheap, and if kept in a tin can in a dry place will last for a long time. Coarse, open-meshed cheese-cloth, which should be cut into long strips, or crinoline with the sizing removed, makes the best basis for bandages, as either of these materials will hold in their meshes a large quantity of gypsum. Although they are much better when freshly made, yet when loosely rolled and kept in a dry place, they will remain serviceable and in good condition for many weeks; in fact, I have tested some which was two years of age, which set quickly and remained strong. However, the keeping of bandages is not to be advised. They can be refreshened by baking. In order to wet the bandage properly it should be placed on end and permitted to take its own time, the completion of which will be determined by the cessation of the escape of air-bubbles from the bandage.

The bubbling of air having ceased, the bandage is squeezed moderately dry, and the roller is then carried in the direction indicated for a flannel bandage, the toes being grasped with one hand by an assistant, while his other hand steadies the knee and leg of the patient, the foot being brought into as straight a position as

the tissues will easily bear. If the full correction be made at the first dressing, the pressure will probably be unbearable, time will be lost, and the patient's friends will become disgusted and discouraged.

The number of turns of the bandage will depend upon the age of the child. While it is in arms, it should be no heavier than to prevent breakage.

The manner of holding the foot is important. If pressure be made with the points of the fingers, or in a careless manner, during the setting of the plaster, a depression will result, which, after the hardening of the gypsum, will be sufficient to cause great pain and very probably sloughing. The correcting force should therefore be applied in the manner directed, and while it is slightly tedious for the assistant to grasp the toes in this manner, yet in these young cases it is very easily done.

The addition of a little salt to the warm water used for wetting the bandage will facilitate the rapidity of the setting process. The plaster should become hard in a few minutes. The surgeon will save himself much time and trouble by making, just before the cast is thoroughly hard, a slit with his penknife down the front of the cast, particularly in the thick portion just in front of the ankle-joint, as subsequent section at the latter point with a saw or knife is exceedingly tedious. This line of division need not extend to the top or lower portion of the dressing, as it is easily divided later.

In cases where co-operation of the mother is doubtful, it is well to leave the cast in such a condition that it cannot be removed. Where one can be certain, however, that instructions will be obeyed, the cast can be opened so that it may be removed and the foot manipulated and stretched once or twice daily, which greatly aids in producing a flexible and useful foot. Silicate of soda, starch, chalk, gum, or other rigid material may be used for the same purpose. As silicate is slower in its setting process, it is sometimes well to apply over the dressing a few turns of gypsum bandage, which can be removed on the following day.

Any rigid bandage is open to the objection that it prevents manipulation, which is all-important; but in the class of cases where the assistance of the mother cannot be expected, it forms a most valuable assistant to the efforts of the surgeon. The bandage should be removed every two or three weeks, the parts manipulated and brought into a little straighter position, and refixed by another bandage. The cure will be rapid, and the development of the

muscles will be more easily secured in the future than can be the moulding of the deformed bony structures which will otherwise be necessary.

This dressing can be varnished or shellacked, and should be protected about the top with rubber cloth or oil silk. The great difficulty with all these dressings is, first, that they need constant watching to maintain them in proper position, and, second, and more important, manipulation cannot be carried on properly, and manipulation, above all things, is the one successful element of treatment that can secure mobility, flexion, and an approximately normal foot. Of course, the appliances mentioned can be removed occasionally and manipulation instituted, but for scientific treatment manipulation should be performed many times daily. An apparatus, therefore, which will permit of such manipulation without the loss of time involved in the removal of appliances is essential. since the majority of poor mothers can ill afford to spare this time.

A good apparatus for young children consists of a closely-fitting leather shoe opening to the The sole at the shank for one-third of an inch consists of soft upper leather instead of ordinary sole leather. This soft shank permits movements in all directions, and is a cheap substitute for a ball-and-socket joint. To this shoe should be attached firmly by a plate a stirrup with uprights reaching above or below the knee, as necessary. The anterior part of the shoe can be moved readily by the hand, and stretching of the contracted tissue twenty times a day is possible without removing it Steady traction force which from the foot. will act whether the child is awake or asleep can be maintained by a catgut cord fastened opposite the little toe, and carried outward and upward through an eyelet in an arm extending forward and outward from the outer side of the stirrup. To this catgut cord is attached a strip of elastic fastened to a button or buckle on the outer upright near the knee. The same idea is accomplished by elastic cords and by the balland-socket joint of Sayre's appliance; also by the appliance of Chance.

Of course, a proper apparatus is most effective when it can be afforded, but a simple appliance accomplishes the same result. Lacing strips of rubber printer's blanket round the ball of the foot and the calf of the leg, and then connecting the two parts by an elastic strap, or the apparatus of Barwell, which supplies elastic force to take the place of the weakened peroneals, are both useful devices. Farwell's dressing, which acts in a similar manner, has the

decided disadvantage that it must remain permanently in place. With young children it becomes speedily soiled, and is very apt to excoriate the flesh. This dressing consists of an eyelet in a strip of hard material, as tin, which strip is fastened to the outside of the leg by means of adhesive plaster and bandages. similar eyelet is fastened about the metatarsus of the foot by a many-tailed strip of adhesive plaster. An elastic cord extends from the eyelet opposite the fifth metatarsal to a point opposite the head of the fibula. The chains and hooks in this apparatus also render it objectionable for young children, although the principle is excellent. An ordinary walking shoe with stiff sole and an elastic strap from the anterior part of the foot to the outer upright near the knee will also assist in overcoming equinus, but it, of course, has little effect upon the varus. Beeley's, Smith's, and many other forms of apparatus act upon this principle. Another apparatus, which does not give elastic force, and does not permit of manipulation when in situ, is Gemrig's or Kolbe's modification of Scarpa's shoe, which acts upon the varus by a worm-screw in the sole, and upon the equinus by screw-power acting in front of the ankle. Care must be taken that it does not produce

All these appliances require the most careful fitting and adaptation of the parts, otherwise the foot will turn in the shoe, or will slip from its bed. The utmost care should be used to maintain the heel firmly in position. Extension apparatus and forcible extension of the contracted tissues, of which Schaffer's shoe may be taken as a type, are beneficial if properly applied and cared for. Taylor's shoe, Beeley's and Bradford's apparatus, are also good, but none of them can correct a deformity except they are properly fitted and closely watched.

It is only necessary to bear in mind the fact, already emphasized, that it is entirely unnecessary to secure the plantigrade position before the end of, at least, the tenth month.

This treatment can be continued, as a rule, until the child reaches the age of eight or nine months, when, if the contracted tissues are still dense, and especially if spasm is developed by point-pressure, surgical means will become necessary. It is ordinarily perfectly correct to defer the operative proceedings until this time. If the equinus, however, is great, and the heel so small that apparatus cannot be readily kept in position earlier, section, at least of tendo Achillis, is advisable. The weight of the body, if brought upon the outer sides of the feet, will rapidly tend to increase the deformity, and

i,

t

Ъ

11

A

n

1

۲۱ ند

h

!T

:С

æ

a

n

especially to alter the shape of the bones. The child, therefore, should not be permitted to stand erect with its feet in an abnormal position.

We will not here discuss operative measures further than to say that every contracted tissue should be divided to such an extent that forcible manipulation and moulding will at once permit the foot to be brought freely down upon the sole in walking, and thus secure at every step the most valuable corrective manipulation and pressure that can possibly be obtained. The natural activity of the child will speedily serve as a most valuable agent in forming the tarsal bones, and is far superior to any form of apparatus. Walking with the foot in proper position is, therefore, both a valuable gymnastic exercise for the muscles and a mechanical remedial measure.

As infantile cases only are intended to be considered at this lecture, the consideration of further operative means will be postponed to a future occasion.

#### CONCLUSIONS.

- r. The first month of life is the period of greatest growth, and to neglect treatment of club-foot during this time is to permit the bony and soft tissues to become permanently misshapen.
- 2. Rectification should be commenced from birth by various simple measures.
- 3. Correction can be accomplished by a variety of dressings.
- 4. Manipulation is exceedingly important for the production of a flexible foot.
- 5. Apparatus should be applied as soon as the foot and leg are in position for its application
- 6. Rectification and manipulation should be continued up to the age when the infant is ready to walk, at which time, if the foot cannot be placed upon the sole firmly, operative measures should be instituted.

# TREATMENT OF ABORTION FOLLOWED BY SEPSIS.

Clinical Lecture delivered at the Philadelphia Hospital, December 10, 1892.

BY E. E. MONTGOMERY, M.D.,

Professor of Clinical Gynzcology, Jefferson Medical College; Obstetrician to the Philadelphia Hospital; Gynzcologist to St. Joseph's Hospital.

CENTLEMEN:—This patient is twenty-five years of age; father died of pneumonia, mother of Bright's disease. Puberty occurred at fourteen, menstruation not painful. Flow was regular, lasting five days, normal in amount.

During the last three or four years has been painful. She had a child two weeks ago at six months. Labor natural; child still-born. She got up on the twelfth day and came to Philadelphia from Cincinnati. Stayed all night at the stationhouse, from which she was brought to the hospital. She complains of pain in both sides of the abdomen and discharge from the vagina: bowels constipated, while the appetite is good; feels weak, but sleeps well. I have not examined her, and know no more of her history than is here given. She suffers from pain on both sides of the abdomen. The belly is flat. presenting no indication of distention. With such a history we would not expect to find any severe or active inflammation of the peritoneal cavity. There is no marked tenderness upon palpation, although she complains a little when deep pressure is made over the right inguinal region. Her uterus is still somewhat large; not more so, however, than we would expect to find at this period of convalescence in a woman who had taken so little care of herself. The organ is anteverted and perfectly movable. There is still some bloody discharge. A bloody flow may be prolonged after the delivery of the patient by a variety of conditions. Not infrequently hemorrhage at the end of two or three weeks is induced by displacement of the uterus, more particularly from retroversion of the organ. It may take place from a portion of the retained placenta, the separation of which gives rise to hemorrhage. It is also a symptom consequent upon endometritis, and this is probably the explanation in this patient. She has a slight inflammation of the mucous membrane. from imprudence in travelling over six hundred miles within twelve days after delivery. want of care during this time has induced the inflammation which causes this symptom. flammation of a limited portion of the endometrium would give rise to hemorrhage; thus, the site of the placenta may be the seat of inflammation without other portions being involved. It should not be forgotten that hemorrhage may result from constitutional conditions. Where the patient is the victim of heartdisease, Bright's disease, or disordered portal circulation from obstructed liver, hemorrhage, sometimes of profuse character, may be present. In such patients, however, it is more likely to take place immediately following confinement, and in the earlier part of the convalescence. Inflammation of the pelvic organs other than of the uterus, interfering with its circulation, may cause uterine hemorrhage. Thus, it is not infrequently the result of pelvic exudation from an inflammation in the tube or ovary.

The causes here mentioned are sufficient to indicate that we are not safe in any patient in simply prescribing for the symptom, but should endeavor as thoroughly as possible to arrive at a definite cause and treat it.

That it is not due to uterine displacement in this patient is evident by physical examination; the same discloses the absence of inflammatory exudation in the pelvis. There is no mass of exudation, no fixation of the uterus, no elevation of temperature, all of which would be present if such conditions existed. Her temperature has been high at no time, maximum temperature being 99° F.; it is now normal; so that we have no active inflammation about the uterus to obstruct the circulation and be a cause of hemorrhage. Careful interrogation of the action of the various organs indicates absence of disease of the kidneys, liver, or heart, thus precluding its occurrence from constitutional conditions. There are patients, it is true, in whom there is a predisposition to hemorrhage, but the absence of any history of this kind in the previous life of this patient would preclude this origin. There is, however, an engorged condition of the endometrium resulting from the exposure to which she has been subjected so recently after her confinement, and without doubt to this is due the bloody discharge she has had since her delivery. If we had found her suffering from a retrodisplacement of the uterus, the indication would have been to correct this by replacing the uterus in its normal position and maintaining it there by the introduction of a pessary. In the absence of any marked indications of inflammatory trouble, the absence of elevation of temperature, I do not feel that it is necessary to subject her to active manipulation. I see no necessity for exploring the cavity of the uterus for retained portions of placenta. There is no offensive odor to the discharge, the uterus is not larger than we would expect to find it under the circumstances, and the hemorrhage is not of sufficiently severe character to demand exploration. If, however, this hemorrhage should continue, become more severe, or be associated with pain or inflammatory symptoms, we would certainly feel it desirable to explore the cavity of the uterus to determine whether there was any retained mass within. As this exploration, in the majority of cases, is attended with a certain amount of pain and discomfort, causes the patient to be nervous. to contract her muscles, and render them rigid, increasing the difficulty of the procedure, it is better to place her under the influence of an anæsthetic, and thus secure relaxation of the

muscles and the ability to more thoroughly and carefully explore the cavity. The ordinary anæsthetics, such as ether and chloroform, require a considerable length of time for their administration, and are looked upon by the patient as rather formidable agents. unfrequently she is very sick for a length of time following their use. For these reasons an anæsthetic that acts quickly and passes off quickly is much to be desired, and we have such a one in the bromide of ethyl, an agent which serves an exceedingly useful purpose where an anæsthetic is wanted for a short time. A few inspirations of the drug place the patient so that her muscles are relaxed. pain is removed, and the cavity of the uterus can be explored to the fundus. I am quite aware that in advocating this drug I am bringing to your attention one that is considered an exceedingly dangerous agent. It was introduced by Dr. Levis in this city a number of years ago, and, unfortunately, was administered by him to a patient suffering from disease of the lungs. This patient had a number of pulmonary cavities, and during administration of the anæsthetic stopped breathing. Artificial respiration was at once begun, and by so doing the discharges were pressed out into the airpassages, completely occluding them, and the patient died. As a result, the use of the drug was interdicted in the Pennsylvania Hospital. and has since been considered as dangerous. Its use has been continued by a number of men, particularly by Prince, of St. Louis, and Chisholm, of Baltimore, who have given it in a large number of cases, one advocating it as the anæsthetic for operations on the eye. I have used the drug for fifteen years in every case of labor I have attended, in all examinations where it is desirable that an anæsthetic should be used, which comprises several hundred cases. and have yet to see the first patient who has presented the least indication of danger from its use. It is an anæsthetic which acts quickly and is much less likely to give rise to sickness of the patient. It can be given by the physician in his office, and the patient in ten minutes be allowed to go out. In the use of an ordinary anæsthetic the patient generally would not be ready to leave the office for two or three hours. So I say for the examination of patients we have no better agent than the bromide of ethyl. Now, its value is, in that it relaxes the muscles, removes the nervous fear of the patient, enables the exploration of the entire cavity of the pelvis or uterus, and affords an opportunity for removing any foreign body that may be contained therein. The presence

of growths within the walls of the uterus may cause hemorrhage after delivery. These sometimes can be removed by enucleation.

How shall we treat this patient? We will direct that she shall be given a douche of hot water,—a quart to a gallon twice in twentyfour hours. She shall be given drugs which will decrease the amount of blood sent into the uterus; fluid extract of ergot, a drachm three times a day; the bowels kept perfectly regular; given a good nutritious diet; in conjunction with which we may give, for its alterative effect upon the structures, chlorate of potassium, 5 to 10 grains three times in the twenty-four hours. This course will be all, I think, that will be necessary to complete the process of involution and reduce this uterus to its normal size. suppose she continues to have a bloody discharge, that this discharge becomes offensive, indicating possibly the retention of portions of the placenta, and that a septic process is developing or present. Under such circumstances we would explore the uterine cavity,—not only explore it, but carefully curette it. It is the usual custom, where symptoms of sepsis follow delivery, to begin with intrauterine injections. This is, however, an ineffective process for accomplishing the end. Although injections may be frequently given, it must be remembered they can at best only sterilize the surfaces with which they come in contact. This surface is covered with decomposing debris, beneath which the germs may rapidly multiply, forming ptomaines, which are absorbed, producing continuous elevation of temperature. uterus after the delivery of the patient is large and flabby. The drainage from it is exceedingly defective, and there is more or less retention within its cavity of discharge which does not make its exit. The washing out of the uterus removes only the superficial débris and not that more firmly attached to the wall. The uterine surfaces lie in contact with each other. The elevation of temperature promotes the multiplication, while the retained debris affords nutritious soil for the development of germs, and we have the patient consequently subjected to high temperature and the existence of septic processes. In such cases the inflammatory trouble rapidly extends from the uterine mucous membrane to that of the tubes, ovaries, and peritoneal cavity. Of course the process by which the poison is conveyed is not only through the tubes, which is probably the least dangerous track it can pursue, but it also travels through the blood-vessels and lymphatics. We not unfrequently have inflammatory conditions in the pelvis, in which the

lymphatic glands become the seat of infection. and within which abscesses form, and patients die from long-continued septic processes. On the other hand, we will find the uterine walls the seat of multiple abscesses, or, again, that the blood-vessels carry septic material into the broad ligaments on either side, which become extensively involved, producing purulent infiltration, as we have seen in patients operated on in the Philadelphia Hospital, in whom pus was found behind the colon wall above the pelvis. These septic processes travel in this way as well as through the tubes, giving rise to extensive infiltration. Post-mortem examination may show the broad ligament extensively involved, while the tube remains free. The disease may travel through the tube itself to the peritoneal cavity, affording a source for the development of an abscess in a sensitive ovary, while the tube remains apparently unaffected. It has been simply the channel through which the inflammation has been conveyed. The rapidity with which this process may be carried on, the influence it has upon the future of the individual, causing death, or sometimes worse than death, by crippled conditions of the functions of her organs, renders it important that we should attack the disease promptly, that we should not wait for the processes of development until they have become of such a character that they can no longer be remedied by superficial operation; consequently, where sepsis shows itself during the convalescence of the patient, we should at once explore the cavity of the uterus. should not be content with exploration and injections, but we should use measures to remove the material in which the development and multiplication of germs takes place. This is just as true where sepsis develops after abortion as where it follows the delivery at full term. Examination may reveal that the neck of the uterus is contracted, and we are unable to determine how much material is locked up in the cavity of the organ.

How shall we proceed? By all means place the patient under an anæsthetic, dilate the uterus with bougies, and afterwards use the curette. In the use of this instrument in ordinary cases such as this, after confinement, the uterus is sufficiently relaxed to permit of its dilatation with the finger; the finger can be passed into the cavity until it reaches the fundus. After exploration with the finger, we should then use the curette, preferring the sharp instrument, using it thoroughly and carefully. It must be remembered that the wall of the uterus is softened by the processes:

first, of pregnancy; second, retrogressive processes following; and, third, inflammation during convalescence; so that in the use of the curette it must be done carefully, not injudiciously driving the instrument into the cavity of the organ and through its walls, but by holding the instrument as you would a pen, passing it over the uterus on all sides, so as to go over and scrape the entire cavity of the organ. In a woman where the uterus is large, a larger curette will be most serviceable, using a sharp, fenestrated instrument. This should be followed by an intrauterine douche of sublimate solution (1 to 2000) by means of a double catheter, so that by no possibility will the fluid accumulate in the uterus and its outlet become obstructed, and thus distend the Fallopian tubes, escaping into the abdominal cavity.

The sublimate solution should be followed by an irrigation of sterilized water. A sufficient amount of mercury may be retained within the uterus to give rise to the poisonous effects of the drug. Washing it, however, with sterilized water precludes this possibility. Having irrigated the cavity of the uterus, we do not simply depend upon nature to drain an infected cavity, but having sterilized it as thoroughly as we can, we then pass into the cavity a twist of iodoform gauze, carrying it to the fundus of the organ. The advantage is that it keeps these inflamed surfaces apart, consequently there is not the opportunity for the subsequent infection and the redevelopment of septic processes. It acts as a capillary drain and promotes free evacuation from the uterus. By its influence upon the uterine walls it produces a serous exudation, and thus aids in elimination. By its presence as a foreign body it stimulates contraction of the uterus, the activity of the circulation in the walls of the uterus decreases the quantity of blood, and we have, consequently, from the presence of this rope of gauze, a melting down of the uterus and the process of involution is more rapidly accomplished, the gauze tampon thus doing good in a variety of ways: first, keeping the surfaces apart; second, promoting drainage; third, causing a flow of serum from the walls of the uterus rather than the absorption and taking up of the products and carrying them into the circulation; fourth, by its influence upon the uterus causes its walls to contract, and in this way more readily decreases its size. Where the cavity of the organ has been thoroughly sterilized, the drain may be permitted to remain seventy-two hours. It should then be removed, the parts again thoroughly irrigated,

and a similar drain introduced. By this course we will find the patients rapidly recover. The process which threatened to be a severe one is arrested and limited to the uterus; we have our patient saved from the danger of very serious conditions. But supposing trouble has gone beyond the uterus; that infectious processes have already developed before the operation has been done. We will probably find then that the infection is of such a character that nature is no longer able to throw it off, and will develop trouble, requiring more active measures for its relief.

A patient came under my observation some time ago in a neighboring city, who, in the birth of her first child, had had a slight laceration of the perineum. A week later, when I saw her, she had a temperature of 106° F. It had gradually reached this elevation during the week. I was asked to see her with a view of determining whether there was anything within the peritoneal cavity to explain the abnormal symptoms. I palpated the abdomen thoroughly, and through the vagina found the uterus movable; no inflammatory condition of the broad ligaments on either side. Intrauterine injections had already been given from the time the elevation of temperature began. Introducing my finger into the uterus, I found a marked flexion just above the internal os, and as soon as this was dilated an exceedingly offensive odor was recognized. I then passed my finger to the fundus of the uterus, and succeeded with it and a curette in removing a couple of ounces of putrid material. The uterus was thoroughly irrigated with sterilized water, and a rope of gauze carried to the fundus. The temperature subsided at once and remained normal for fifty-four hours. After the gauze was removed, it then for three weeks varied from 99° to The patient seemed to be doing 101° F. fairly well. At the end of the fourth week I saw this patient again with a temperature of 106° F. I could find no indication of pelvic inflammation, nothing that seemed to point to a diseased condition of the tubes or ovaries. The uterus was again dilated, this time without finding anything within its cavity to explain the symptoms. With the hope that the condition might be a temporary one, the patient was prescribed for and left forty-eight hours, to await developments. At the end of thirty-six hours I was again summoned to see She then had a temperature of 104%° F., and had frequent chills. She was etherized, and the abdomen opened with a view of ascertaining, if possible, the septic centre. Upon opening the abdomen, the uterus was found perfectly free and movable; there was not the slightest indication of any infiltration or breaking down of its walls. The entire surface of the uterus was thoroughly inspected, and without the least sign of anything as an explanation of the trouble. Both tubes were apparently healthy and were not enlarged. The left tube slightly reddened, and in its abdominal end a piece of lymph projected. The right tube was healthy; the right ovary was probably twice its normal size, presenting an appearance of œdema. The left ovary was four times its normal size, and on its anterior surface a piece of lymph similar to that which was projecting from the end of the tube was found. Both ovaries were removed, and upon opening them the left was found to contain a teaspoonful of greenish, offensive pus. The temperature rapidly subsided following the operation, and the convalescence was uninterrupted. She is now in the best of health.

Here was a patient in whom dilatation and curetting of the uterus had not been performed sufficiently early to prevent the disease extending beyond the uterus; one also in whom the peculiarity was that the tube had acted simply as a means of communication. The left ovary was probably the one in which the corpus luteum of pregnancy existed, and, through this, was more sensitive and more readily infected. The presence of the lymph within the tube and on the side of the ovary led me to believe that the tube was the channel of communication. This was apparently not one of the causes of extensive inflammation, but simply the passage of the infectious material through the uninvolved tube to the sensitive ovary, in which it found a suitable nidus for its develop-

In my experience in this hospital, I remember, shortly after beginning my service as one of the visiting staff, a woman who had an attack of sepsis, and ran apparently through the course of the disease and was convalescent. During the convalescence the temperature remained a little high; pulse always more rapid than normal. The temperature had been for nearly four weeks a little above normal. She had been going about, when suddenly she was taken with a state of collapse and died within forty-eight hours. It was found that the uterus had been the site of a number of small abscesses, and the fundus had consequently sloughed off, leaving the organ in the shape of a funnel. This is one of those cases in which the disease had occurred in the uterus itself. had travelled into the uterine sinuses, had developed multiple abscesses, and these had subsequently caused the destruction of the fundus of the organ. In my experience, in investigation of this subject, those cases in which the disease is most active, in which the symptoms are most virulent, are cases in which the disease has travelled through the blood-vessels or the lymphatics.

A case occurred during my term of resident in this house, where a woman had an elevation of temperature running up to 107° F. was reduced by placing her in an ice-pack, but in a few hours it would again rise. On her death the only pathological condition found was a teaspoonful of pus in the uterine sinuses of one side. In a case that occurred in my experience within the last year, a woman in this city, in whom there had been a development of sepsis, following confinement, had been subjected three or four days after delivery to curetting. In seeing the patient at the end of a week, and finding the curetting had been done without an anæsthetic, that the perineum had been sutured, and these sutures had not been removed, I felt it was possible there might be still material within the uterus which caused the symptoms. The patient was given an anæsthetic, sutures removed, the vagina sterilized, and the cavity of the uterus explored. An ounce of putrid material was removed by the curette. Gauze was packed into the uterus, and the temperature subsided, running nearly to normal, but within a few hours again rose. At the end of forty-eight hours the abdomen was opened with a view of ascertaining the source of the poison, and it was found that a number of multiple abscesses were situated in the uterine sinuses. The uterus consequently was removed, but the patient died within twenty-four hours, still with a high temperature. Here was another case in which the poison travelled beyond the uterine mucous membrane. The infection was a rapid one; it had passed through the blood-vessels. Its influence on the health of the individual was profound and the progress of the disease rapid.

This series of cases is related with a view of impressing upon you the importance of the subject we have now under consideration, that of treating the disease before it has passed beyond the uterus into the surrounding structures, and of the greater danger where it travels through the blood-vessels and lymphatics. Where the disease travels into the tubes, nature very promptly seals up the abdominal end, and we have resulting an abscess which has its barriers. There is, of course, considerable matting together of the tissues about it. We will have extensive infiltration before

nature has imposed her barriers. While pus is here, it is within limits, beyond which nature will not permit it to go, and this is the safest form of the development of sepsis, and the one which is most readily relieved and for which there are the greatest chances for cure. No one has practised abdominal work who has not seen numbers of cases in which the inflammatory trouble has extended through the appendages,—patients in whom there have been development of pyosalpinx, formation of pus within the pelvis, possibly rupture of the tube; but nature has imposed barriers, so that although the tube may rupture, it escapes into Douglas's pouch, forming a new pus-cavity. These are the most amenable cases for treatment.

With regard to treatment, there is a difference of opinion as to the methods of procedure. I believe those who advocate reaching pus collections of this kind through the pelvis, where there is an extensive inflammation, are proceeding upon the most scientific plan. Where we have a pus collection in one or the other tube, with possibly considerable purulent effusion in Douglas's pouch, I believe the proper plan in such cases is to open through the vagina rather than through the abdomen. not mean, however, that this is necessarily a curative operation. It is only a palliative one. Its object is to relieve the patient of the load she is carrying at the time and prevent its fatal results. A secondary operation may be necessary to break up the adhesions and remove the pus-sacs; but where we have a patient suffering from pelvic accumulation, with a large quantity of pus, and nature has thrown out the barriers, the better plan of procedure is to respect these and open into the pelvis, making free opening, wash out the discharge, break up possible sacs where they can be reached, and then, after thoroughly washing out the cavity with sterilized water and peroxide of hydrogen, we may pack with iodoform gauze, in this way following out nature's course. As the barriers have shut off entrance into the larger cavity, we are enabled to relieve the more active condition and resort subsequently to an operation for the removal of the diseased masses when the condition of the patient is better. I have operated on one or two patients where the operation resulted fatally, in whom I am satisfied, if I had used this procedure, the results would have been different. With a large accumulation in the pelvis, the abdominal cavity is opened, adhesions are broken up, the entire cavity is more or less brought in contact with the fluid, and the result is, you have your patient in an enfeebled condition, endangered by the shock of breaking up these adhesions by contact of excessively infectious material, with large absorbing surfaces, and the patient, if she does not die from shock, runs serious risk from the subsequent infection; so it is better not to interfere with these until the large source of poison has been removed.

ENTEROCLYSIS IN THE SUMMER DIAR-RHŒA OF CHILDREN, WITH A REPORT OF SEVENTY-EIGHT CASES, TO-GETHER WITH THE RESULTS OF LABORATORY INVES-TIGATIONS.

Being a Thesis to which was awarded the Prize offered by the Chair of Medicine in the Jefferson Medical College, May, 1893.

By R. E. Müller, B.Sc., M.D., Assistant Physician in the Children's Dispensary, Jefferson Medical College Hospital.

> (Concluded from page 438.) RÉSUMÉ.

A SIMPLE classification of the summer diarrhoeas of children would divide them into two kinds: first, the simple; second, the infectious.

The simple diarrhoas constitute a small percentage of the cases. They are symptomatic of derangements of function in the intestinal tract unaccompanied by fever, and without involvement of the stomach. Usually they set in suddenly. The infant becomes restless; the stools become frequent, watery, yellow or grayish in color, sometimes green. Recovery takes place in a few days, or the trouble develops into a more serious form. All of the cases of this group respond readily to intestinal irrigation with cool or tepid water, or often to enteroclysis with a saline solution, followed by a restricted diet. For unloading the bowels, castor oil (of which a teaspoonful may be given to an infant a year old) is useful, but it requires four or five hours to act. When, on the one hand, the stools are grayish and lumpy, or, on the other hand, are watery and of offensive odor, from five to ten grains of magnesium sulphate, dissolved in a little warm water and repeated every hour for three or four doses, has been found to act advantageously in every instance, after the bowel had been cleansed once or twice by irrigation. Magnesium sulphate depletes the system, and, as Professor Hare says, "bleeds the patient into the bowel." This treatment is followed by large doses of a pure preparation of bismuth subnitrate.

If the child be at the breast, the intervals of nursing are lengthened and the time at the

breast is shortened until the diarrhoea has been controlled. If fed artificially, the diet is restricted to sterilized milk, from two to four ounces being given every two hours. After the diarrhœa has been controlled, a careful regulation of the diet is necessary to prevent recur-It was found that infants fed upon cow's milk, Nestle's or Mellin's food, or any of the many other preparations, could readily have their diet changed to sterilized milk without the development of gastric disturbance. Of course, there were isolated cases in which it was decided to adhere to the infant's habitual nourishment. whether this was cow's milk or an artificial preparation; but in at least ninety-five per cent. of all cases that came under observation sterilized milk was substituted without the development of gastric or intestinal disorders.

The diarrhœas of the second class are designated infectious. They may be subdivided into three forms,—namely, the mild, the severe, and the choleroid. These forms principally occur in children fed artificially during the hot summer months. They depend, according to Meigs and Pepper (G), upon ptomaine-poisoning, the toxic matters being formed either in the milk, outside of the body, or the intestinal tract, from bacteria introduced with milk. Children weakened by previous attacks of simple diarrhœa, or by inherited syphilitic or tuberculous taint, seem most liable to the disease.

The mild form presents, during the first day or two, all the symptoms of simple diarrhœa. The onset is gradual. The stools, as in simple diarrhœa, during the first day or two, are of thin consistency, and of yellow or grayish color; later, they generally turn green and contain mucus. The child is fretful, the appetite is lost, and the tongue presents a thin white coating. The temperature is subfebrile, the child loses flesh and becomes pale. There may be slight gastric disturbance.

In the severe form the onset is sudden, and there is great prostration from the beginning. The temperature rises quickly to 103° or 104° F., and the sudden rise is often followed by convulsions. These symptoms last for a few hours, when vomiting commences. The vomited matter, consisting at first of the undigested contents of the stomach, is soon mixed with mucous or bilious matter. There may be three or four stools an hour. Sometimes the vomiting is either followed or preceded by diarrhæa; the color of the stools may be any shade of gray, green, yellow, or brown. There may be convulsions at the outset.

In the choleroid form all of the preceding symptoms are intensified. The temperature is

elevated from the very first, and soon rises to from 103° to 105° F., sometimes reaching even 108° F. The pulse becomes feeble and weak, towards the end irregular and imperceptible. Thirst is extreme. The copious and frequent stools are at first pale green, yellow, or brown, and very offensive; but as the disorder advances the discharge from the bowels becomes more watery and odorless, and often like rice-water. At the onset of the disease the volume of the dejecta is often so great that one evacuation will saturate the napkin of the child and completely wet through the bedding. With the advance of the disease the number of stools increases, but the quantity diminishes. is great prostration from the beginning. In, these severe cases the indications are, therefore, first, the removal of the cause; second, the support of the patient until the ptomaines are eliminated or neutralized.

The first indication embraces the sterilization of the milk and the removal from the intestinal canal of its fermenting contents by irrigation. The sterilization of milk is brought about by keeping it at a temperature of 167° F. for half an hour in an appropriate apparatus. Afterwards it is poured into a number of sterilized four-ounce bottles, well closed with corks, wrapped with cotton. The bottles are then placed on ice. By this process all the germs in the milk are destroyed, and the nutritive qualities of the milk are not interfered with.

The second indication embraces the support of the patient until the toxic matters are thrown Alcohol in the form of whiskey or brandy is used in almost all cases. Shortly after the admission of the child, all kinds of farinaceous and milk foods are entirely withheld for at least twenty-four or thirty-six hours, if vomiting and diarrhœa are among the prominent symptoms; while brandy or whiskey is employed in doses of five or ten drops every half-hour, until the violent symptoms subside. As the febrile condition is ameliorated, and the stomach becomes tolerant, though the diarrhoa still persists, bismuth subnitrate from grains 5 to grains 15 or pepsin from grains 2 to grains 5 is given every three hours. The patient is allowed a small quantity of sterilized milk, the amount of which is gradually increased to four ounces every two hours. If the child is nursed at the breast, the intervals are always systematically observed. Stimulants are frequently repeated in small, divided doses. In urgent cases, in accordance with the age of the child, the doses may be repeated every hour or every half-hour. soon as the symptoms for which alcohol is given begin to moderate, the quantity is reduced and

smaller doses are given at longer intervals. In cases of collapse alcohol was not found sufficient, and external heat to the extremities, spice-bags to the abdomen, and atropine sulphate hypodermically, are to be used. In high fever nothing seems so grateful to a sick child as small pieces of ice. The little patient ceases to cry and struggle if cold water or ice be given freely, the greedy swallowing of which shows how much of the distress is due to thirst. omel in small doses,  $\frac{1}{12}$  or  $\frac{1}{20}$  of a grain every hour, seems to act very beneficially in cases of severe and protracted vomiting. sation of vomiting is generally a favorable omen, unless the vital powers are very low, when it may be the precursor of death. When a child is at the breast, and the supply of milk is abundant and good, the prognosis seems to be more favorable than if the child has been weaned. The outlook, on the contrary, seems to be more discouraging if the child is born in winter or spring, so that the cutting of the more troublesome teeth and weaning come together in the same summer. A rapid fall of temperature of from fifteen to twenty degrees Fahrenheit, and particularly electric disturbances in the air, were often observed to cause an outbreak of acute diarrhœa.

Acute enterocolitis often follows an attack of simple diarrhœa in hand-fed children three to four years old. The stools change and contain traces of blood and mucus. The abdomen becomes distended and tender along the line of the colon; vomiting, though not a characteristic symptom, may be present at the onset. The diarrhœa may be gradually checked and convalescence is established in two to three weeks, or the disease becomes subacute, the fever subsides, but not so the diarrhœa. Irrigations with tepid water act with great benefit in these cases when combined with an absolute milk diet.

#### HISTORY OF EIGHT TYPICAL CASES.

No. 448.—G. C., a male, four months old, hand-fed. The mother of the child only spoke Russian, so that a complete history could not be obtained.

When admitted the child was in a state of collapse. The stools were small, white, and odorless, and would soak through the napkin without leaving a stain; there were frequent and severe convulsions. The face was ashy pale and cadaverous looking; the body was greatly emaciated, and the skin hung in loose folds. The eyes were sunken, glassy, and covered with a film. The breathing was irregular; the pulse imperceptible at the wrist; the abdomen hard and hot, while the extremities

were cold. The child was unable to swallow, and seemed to be unconscious. The temperature taken in the rectum was 105.6° F.

4.00 P.M. Rectal temperature, 105.6° F.; irrigation with ice-water.

4.45 P.M. Rectal temperature, 101.6° F.

9.00 P.M. Rectal temperature, 105.4° F.; irrigation with ice-water.

8.00 A.M. Rectal temperature, 104° F.; irrigation with ice-water.

8.45 A.M. Rectal temperature, 101° F.; irrigation with ice-water.

1.00 P.M. Rectal temperature, 104° F.; irrigation with ice-water.

1.45 P.M. Rectal temperature, 106.6° F; irrigation with ice-water.

8.00 P.M. Rectal temperature, 103.4° F.; irrigation with ice-water.

Although the reduction of temperature after each irrigation was quite considerable, the temperature never sank much below 101° F., and rose almost immediately to near its former level. During the first twenty-four hours after admission the violence of the convulsions increased and the condition of the patient gradually grew worse. Although hot-water bags and hot bottles were continuously applied to the extremities and two hypodermic injections of atropine sulphate, grain  $\frac{1}{260}$ , were given at an interval of thirty minutes, the action of the heart could not be improved. The temperature was not controlled for any length of time, and the child, which had shown great vitality, succumbed on the third day after admission.

The patient was one of the first grave cases admitted to the hospital, and I think the prognosis might have been more favorable had irrigation been practised at shorter intervals than it was.

No. 436.—L. F., a female, hand-fed infant, eighteen months old, presented symptoms of severe choleroid diarrhæa, with convulsions. The temperature taken in the rectum was 104.8° F.

IO.00 A.M. Rectal temperature, 104.8° F.; irrigation with ice-water.

10.45 A.M. Rectal temperature, 102.2° F.

3.00 P.M. Rectal temperature, 103.8° F.; irrigation with ice-water.

4.00 P.M. Rectal temperature, 100.2° F.

9.00 P.M. Rectal temperature, 100.4° F.

10.00 A.M. Rectal temperature, 101.6° F.; irrigation with ice-water.

8.00 P.M. Rectal temperature, 99.6° F.

The convulsions ceased after the first irrigation.

No. 451.—R. L., a female, eleven months old, breast-fed, presented the characteristic symptoms of choleroid diarrhoea, associated

with simple stomatitis. The temperature taken in the rectum was 106.8° F.

to.oo A.M. Rectal temperature, 106.8° F.; irrigation with ice-water.

10.45 A.M. Rectal temperature, 104° F.

1.00 P.M. Rectal temperature, 105° F.; irrigation with ice-water.

1.45 P.M. Rectal temperature, 102.2° F.

4.00 P.M. Rectal temperature, 104.6° F.; irrigation with ice-water.

4.35 P.M. Rectal temperature, 99.8° F.

After the third irrigation the child presented marked symptoms of shock. The temperature taken in the rectum fell to 99.8° F.; in the axilla it was 98.6° F. The extremities grew cold. A hot pack was at once applied. At 9 P.M. the temperature taken in the rectum was 100.2° F. The child made an uninterrupted recovery; the stools assumed a normal appearance on the third day after admission.

No. 576.—F. D., a female, hand-fed infant, seventeen months old, presented the characteristic symptoms of choleroid diarrhœa, with ricewater stools, convulsions, and a temperature in the rectum of 104° F.

II.00 A.M. Rectal temperature, 104° F.; irrigation with ice-water.

11.40 A.M. Rectal temperature, 101.8° F.

12.30 P.M. Rectal temperature, 104° F.; irrigation with ice-water.

1.30 P.M. Rectal temperature, 101.2° F.

2.00 P.M. Rectal temperature, 103.6° F.

2.30 P.M. Rectal temperature, 101.2° F.

6.00 P.M. Rectal temperature, 103.4° F.; irrigation with ice-water.

6.30 P.M. Rectal temperature, 99.8° F.

11.00 P.M. Rectal temperature, 100.2° F.

9.00 A.M. Rectal temperature, 99.6° F.

In this case the irrigation was repeated every hour and a half or two hours, as the temperature rose almost immediately to its original level after each irrigation. The fourth irrigation was followed by a deeper and more lasting remission, with a cessation of the convulsions.

No. 461.—G. K., a hand-fed male, two years of age, had had measles when thirteen months old. On admission the child had rice-water stools every fifteen or twenty minutes, cried almost continually, and could not retain food on the stomach. The alarming symptoms had appeared four days previously, with progressively increasing violence. The temperature taken in the rectum was 104.4° F.

5.00 P.M. Rectal temperature, 104.4° F.; irrigation with ice-water.

5.45 P.M. Rectal temperature, 101° F.

6.30 P.M. Rectal temperature, 104° F.; irrigation with ice-water.

7.00 P.M. Rectal temperature, 101.80 F.

8.00 P.M. Rectal temperature, 104° F.; irrigation with ice-water.

8.45 P.M. Rectal temperature, 100.2° F.

10.00 P.M. Rectal temperature, 103.2° F.; irrigation with ice-water.

10.45 P.M. Rectal temperature, 99.4° F.

The stools soon diminished in number and became green and adherent to the napkin. The child vomited but twice after the second irrigation.

No. 479.-F. Sch., a female, hand-fed infant, aged five months, was brought suffering with a severe form of infectious diarrhoea, which developed soon after an attempt at weaning. There was diarrhoea and vomiting, followed by convulsions. The stools, semi-fluid and green, had a peculiar earthy smell. buttocks were red and inflamed. The child cried almost incessantly and threw its head from side to side; the nostrils were dilated with each expiration. The pulse was frequent and feeble; the extremities were cold; the hands were rigid and the fingers firmly flexed; the pupils were contracted and the secretions of the eyes were deficient. The tongue and lips were red and dry. The temperature taken in the rectum was was 104.6° F.

11.00 A.M. Rectal temperature, 104.6° F.; irrigation with ice-water.

12.00 M. Rectal temperature, 101.6° F.

3.00 P.M. Rectal temperature, 103.4° F.; irrigation with ice-water.

3.45 P.M. Rectal temperature not taken, as child was asleep.

6.00 P.M. Rectal temperature, 103° F.; irrigation with ice-water.

9.00 A.M. Rectal temperature, 99.6° F.

There was marked improvement after the third irrigation. The convulsions and the vomiting ceased and stimulants were taken with great avidity. Saline irrigations were continued morning and night during the next three days, the temperature never rising above normal.

Five weeks later the patient was again admitted to the hospital suffering from a second attack of severe infectious diarrhœa. The child was in collapse and died two hours after admission.

No. 534.—A. J., a hand-fed female, six months old, was admitted with severe infectious diarrhea. Symptoms of collapse were marked. Diarrhea had suddenly set in four days previously and was soon followed by vomiting. There was total suppression of urine since previous day. The temperature taken in the rectum was 105.2° F. An irrigation with

ice-water was at once practised and hot applications were made to the cold extremities. The temperature taken in the rectum thirty minutes later showed a reduction of only 0.8° F. As stimulants could no longer be swallowed, hypodermic injections of atropine sulphate, grain  $\frac{1}{200}$ , were given twice, at an interval of thirty minutes, without improvement. The child died two hours after admission.

No. 533.—E. H., a breast-fed male, three months old, presented the usual symptoms of a case of severe infectious diarrhœa, accompanied by contraction of the tendons and convulsions.

6.00 P.M. Rectal temperature, 104° F.; irrigation with ice-water.

6.45 P.M. Rectal temperature, 102.8° F.

10.00 P.M. Rectal temperature, 104° F.; irrigation with ice-water.

10.45 P.M. Rectal temperature, 100.4° F.

8.00 A.M. Rectal temperature, 102° F.; irrigation with ice-water.

8.45 A.M. Rectal temperature, 99.6° F.

The fall of temperature after the first irrigation was comparatively slight and not as marked as that which took place after the second and third irrigations. The convulsive symptoms subsided after the second.

#### CONCLUSIONS.

My experiences lead to the following conclusions:

- 1. That intestinal irrigation may be considered a valuable adjunct in the methodical treatment of suitable cases of summer diarrhœa.
- 2. That irrigation with cold or ice-water will lower the temperature of the lower portion of the abdomen by direct refrigeration of the bloodmass, and that the procedure is indicated when high temperature, lasting for a considerable time, endangers life by coagulating the cerebral fluid or cardiac protoplasm, or when accumulation of fæces, mucus, etc., in the bowel causes a continued irritation of its mucous membrane.
- 3. That the dangerous effects of the poisonous animal alkaloids are either diminished or counteracted or dissipated by irrigations.
- 4. That the influence on the circulatory apparatus is shown by the change in the pulse, which becomes less frequent and stronger.
- 5. That systemic enteroclysis results in an amelioration of the symptoms and a shortening of the course of the affection, and will often overcome the semi-paralytic condition of different organs.
- 6. That the resistance which the fever offers to its reduction by this method is an index of the gravity or mildness of the case.

7. That alcoholic stimulants are of importance in the treatment of the summer diarrhoeas of children.

#### REFERENCES.

- (a) (b) (j) to (q) S. Baruch. Hydrotherapy (System of Pract. Therap., Hare, vol. i. pp. 453, 533, 509).
- (c) (a). Dr. Foucault, de Nanterre. L'Union Médicale, 1854, pp. 450, 451, 691.
- (e). Giannini della Natura della Febbri e del miglior metodo di curarle. (Treatise on Fever, 1805.)
- (f) (y) (s) (D) (E). Von Ziemssen's Hand-Book of General Therapeutics, vols. ii. and iv.
- (g). Foucault. Address to the French Academy of Medicine, March 31, 1843. L'Union Médicale, 1854.
  - (h). W. Osler. Practice of Medicine, p. 400.
- (r) (s) (t). H. A. Hare. A Review of some Recent Advances in Therapeutics. THERAP. GAZ., Oct. 15, 1892, p. 673.
- (u). F. W. Talley. The Summer Diarrhoea of Infants. Archives of Pediatrics, August, 1892.
- (v). Ludwig's Lehrbuch der Physiologie des Menschen. Bd. i., Seite 310.
  - (w). Winternitz. Wien. Med. Wochenschrift, 1868. (x). Ch. Sihler. The Hydriatic Treatment of Ty-
- (x). Ch. Sihler. The Hydriatic Treatment of Typhoid Fever. Cleveland, Ohio.
- (A) (B). Keating and Edwards. The Pulse in Childhood. Archives of Pediatrics, December, 1888.
- (C) (F). Tripier and Bouveret. La fièvre Typhoide traitee par les bains froids.
- (G). Meigs and Pepper. Diseases of Children, pp. 365, 436.
- L. Starr. Diseases of the Digestive Organs in Infancy and Childhood, pp. 122-205.
  - E. Smith. Diseases in Childhood, pp. 173-202.
- J. L. Smith. The Diseases of Infancy and Childhood, pp. 781-811.
- R. Bartholow. Practice of Medicine, pp. 70-131.
- J. C. Wilson. Summer and its Diseases.
- J. C. Wilson. The Treatment of Enteric Fever, with Special Reference to the Method of Brand. Med. News, Dec. 6, 1890, p. 588.
- J. L. Salinger. Essay on Intestinal Irrigation. THERAP. GAZ., Nov. 15, 1892, p. 733.
- H. A. Hare. A Review of Recent Advances in Therapeutics. THERAP. GAZ., Oct. 15, 1892, p. 673.
- Goodhart (Starr). Diseases of Children, pp. 77-172. Sir Joseph Lister. On Lactic Fermentation, vol. xxiv. p. 435. (Trans. Path. Soc. of London.)
- Fiske Fund Prize Essay on Cholera Infantum. Med. Times, Aug. 5, 1876, p. 542.
- . J. C. Nowlin. Hot and Cold Water as Therapeutic Agents. South. Pract., Nashville, 1881, vol. iii. pp. 235-238.
- Lewy Dupré. Indication et contre-indication, etc. L'Union Médicale, Serié 3, 1876.

Dujardin-Beaumetz. On Hydrotherapeutics, cviii, pp. 169–172. Boston, 1883.

Von Liebig. Puls, Körpertemperatur. Artze Int. Blt., München, 1878, pp. 233-247.

A. F. Erfurth. Hydrotherapia, vol. viii., Hamburg. Seyfert. Uber die vielfache Anwendung des Irrigations apparatus. Wien. Med. Presse, xiii. pp. 745, 771, 821.

Vajda. Bemerkungen betreffend den Fleischerschen
—Irrigations apparatus, vol. xxiii. p. 362. (See W. N. Popow's reference below.)

W. N. Popow. Uber die Anwendung circulirenden Wassers zur permanenten Abkuhlung oder Erwarmung. Ill. Monatschrift d. Arzl. Polytech., Bern, 1883, S. 171-176.

THE BEST METHODS TO BE RESORTED TO IN THE TREATMENT OF SOME COMMON DISEASES.

Being the Annual Address before the Lehigh Valley Medical Association at the Meeting held at Hazleton on August 3, 1893.

By H. A. HARE, M.D.,
Professor of Therapeutics and Materia Medica in the Jefferson
Medical College, Philadelphia,

NE of two duties devolve upon a member of the profession who accepts the courteous invitation of your Secretary to address the Lehigh Valley Medical Association. may devote the time set aside for his address to a recital of original investigation in some branch of scientific medicine having a direct or indirect bearing upon practice, or he may employ the opportunity in discussing certain important points in relation to the practical every-day treatment of disease. The first of these is, if its accomplishment is possible, certainly the ideal which is desirable from the purely scientific point of view, but the second is after all the most interesting to the majority, and certainly productive of the greatest good to the active practitioner. This is due to the fact that it is often much better for a tradesman to take an account of stock than to fill his store with new goods, particularly when reasonable doubt exists as to whether the new will be as frequently sold as the old. His effort should be rather to introduce old and well-tried mateterials into new lines of value, and to interest himself further than this in only a few of the more prominent candidates for permanent usefulness. Recognizing these facts, I have ventured to speak to-day of several topics, not because they are new or unknown, but rather for the purpose of making an estimate as to their value. In making this estimation I have utilized not only current medical literature, but have controlled it by personal investigation in the large hospital service which I have under my care during part of each year. This hospital service is perhaps more valuable in determining the usefulness of various therapeutic measures and diagnostic points than would be a similar number of observations in private practice, since the influences of environment, diet, nursing, and general control are all equal in each case, and the effect of remedial procedures can be studied without complicating accidents or possibilities of irregularity in their employment.

The first of these points which attracts attention is the question as to the methods to be employed by the average practitioner in the treatment of effusions into the peritoneal cavity,-i.e., ascites. One of the recent articles on this topic is that of Cheadle, of London, one of the best-posted clinicians of that medical centre. In this he calls attention to the very diverse views expressed by the profession as to the proper measures to be pursued when such a case presents itself for treatment. Thus, Roberts is practically the only author of a book on the "Practice of Medicine" that Cheadle could find who urges resort to paracentesis or tapping, all the others recommending purgatives, diuretics, counter-irritants, diaphoretics, and other equally feeble methods, and considering paracentesis abdominis only as a last resort. Against such views Cheadle very properly protests, and believes that we are simply blindly following precedent instead of acting for ourselves when we accept such advice as correct. In my comparatively limited experience I thought I had learned that paracentesis was practically the only satisfactory method to follow, and in consequence have tapped every case of well-marked asoites which has come under my care. For this reason the statement of Cheadle that most authors refrained from paracentesis till the last moment caused me to examine American authorities to discover if I had been too ready with the trocar and canula. Fortunately, the result of this examination has been to show that in this country paracentesis is more frequently performed, although even here it is still regarded as a measure to be resorted to late in the malady in most instances. On the other hand, several American authors have recognized the fact that early tapping for ascites is sometimes of great service. Thus, Osler states that in that form of ascites due to hepatic cirrhosis repeated early tapping may give time for a collateral circulation to be established and so a temporary cure effected. Similarly, Lyman says that tapping should not be regarded as a last resort, and no less an authority than Alonzo Clark asserts that it will become necessary in almost every case, and that the question is one as to its early or late employment. He believes that the disadvantages of waiting till the last moment are great, but takes the more moderate ground than Osler or Lyman, that if performed early there is danger of provoking peritonitis, and that this danger is in direct ratio to the earliness of its employment. Bristowe is far more conservative, and states that the operation is often needed, but is generally postponed as long as possible,

and deservedly so. Flint, while recognizing these teachings, believes that they are erroneous, and that tapping early is of benefit in many ways in the avoidance of distention and secondary changes therefrom, not to mention discomfort to the patient. He particularly emphasizes the fact that tapping frequently produces an apparent cure.

The reason that Cheadle's statements as to the value of tapping, so far as the quotations from standard authors are concerned, seem opposed to our common practice of to-day becomes clear, however, as soon as we examine his authorities. It then at once becomes apparent that the treatment of ascites has changed very much, as will be seen by the following quotations from various authors.

Sir Thomas Watson spoke of it as a final resort, with the faint hope of giving temporary relief. Frerichs opposed it on the ground that pressure on the vena portæ lessens the rapidity of effusion. Niemeyer says the abdomen should only be tapped when life is immediately endangered. Thierfelder says, "This operation must not be undertaken unnecessarily, but only in response to an urgent indication, as great dyspnœa, obstinate vomiting," and speaks of it only as treatment for relief of symptoms. "Tapping," he says, "invariably affords merely transitory amelioration." Murchison long approved the rule that the operation should be delayed as late as possible,—that is, until respiration is seriously affected,—on the ground of the loss of albumin involved. Aitken refers to tapping as "the last imperfect resource of our art." In the latest edition, just published, of one of the leading books on "The Principles and Practice of Medicine" (Fagge and Pye-Smith), the direction is, "It should not be performed until the distress caused by the distention of the abdomen becomes insupportable" (vol. ii. p. 300).

Another: "Paracentesis should be put off as long as possible, for the end of the disease often arrives soon after tapping, although in some cases ascites is cured by the operation" (Wickham Legge, in "Quain's Dictionary").

The old school taught abstinence from tapping, the later school is teaching to tap frequently, and the latest school is teaching to tap early. Among the strong advocates for tapping may be found Roberts, Duncan, McCrew and Habershon, and Cheadle. Not the least of those who have urged it in America was the late R. L. MacDonnell, of Montreal, who earnestly believed that in ascites due to cirrhosis tapping exercised a distinct curative influence not only in preventing a reaccumula-

tion of the fluid, but in arresting the cirrhotic process in the liver in those cases in which this lesion underlaid the effusion. Thus, he reported in the Medical News in October, 1889, a case of a butcher who had been tapped repeatedly, sometimes as frequently as every two days, and from whom no less than six thousand four hundred ounces of fluid were withdrawn in about four months for ascites due to alcoholic cirrhosis. The fluid gradually failed to reaccumulate, and, to the surprise of MacDonnell, the patient practically recovered in the course of a year or so to such an extent as to be able to attend to his business and be a hearty man. In the same article MacDonnell quoted another earlier case, in which, after sixteen months and sixty tappings, which removed nine thousand ounces of fluid, a case of alcoholic cirrhosis was completely restored to health. Other cases might be cited, but these are sufficient to show that in young subjects, at least, who have good blood-vessels, the removal of pressure permits of that vitally-essential process in all forms of abdominal effusion, more particularly that due to cirrhosis,—namely, the formation of a collateral circulation. The consequences of ascitic pressure are so grave that it is surely our duty to relieve it in every case, and the sooner this is accomplished the more chance is there for the maintainance of a moderately normal condition of the abdominal contents.

Cheadle has so well emphasized these dangers that his remarks are worth quoting. He says, "The diaphragm is pushed upward, so that abdominal respiration almost ceases; the lungs are imperfectly inflated; congestion, collapse, and basal bronchitis ensue. The heart is embarrassed by the upward pressure, increasing still more the impediment to the circulation already existing in the systemic and pulmonary vessels. The movements of the stomach are hampered, and the circulation in that organ, already impeded by the portal block, is made still more difficult. In the same way the spleen, the pancreas, the intestines, all suffer, while the liver itself is injuriously affected, the pressure of fluid obstructing the portal vein; and, most important of all, preventing the dilatation of the venæ communicantes, the new channel upon which the relief of the obstruction so vitally depends.

"The kidneys do not discharge into the portal system, but into the vena cava, and therefore are not directly affected by the venous block. Their congestion in the late stage of ascites affords striking evidence of the disastrous effects of a simple mechanical external pressure of fluid. When this becomes pronounced, the urine be-

comes scanty, high-colored, albuminous. There ensues, in fact, a passive nephritis, a lessened excretion of urea, and a slight uræmia, adding systemic poisoning to the other disorders."

Aside from the good results already quoted, are there any advantages to be gained in those instances in which paracentesis is not so potent for good and in which it can only alleviate the state of the patient? Compared to the treatment by drugs, such as purgatives, diuretics, and similar measures, it is certainly infinitely preferable. Those of us who have used these methods have generally seen our patients lose in flesh and strength faster than they got rid of the effusion, and in addition suffer the mental annovance and personal inconvenience of a prolonged disagreeable, digestion-disturbing, and perhaps ineffectual attempt. Practically, there is no danger whatever in aspiration if it is done carefully with a fine needle, under antiseptic precautions, and with care not to empty the peritoneum at one sitting. Any cases of peritonitis which may have ensued in the past were probably due to sepsis or traumatism. The pain of a tapping with a fine needle, even when no local anæsthesia is produced, is nothing as compared to the gripes of purgatives or indigestion.

Another question of very great interest to the medical practitioner is that of the proper treatment of diabetes, aside from the matter of diet. In the address in medicine which I delivered at the last meeting of the American Medical Association it was pointed out that this condition is in reality only a symptom, and not a disease, and that it is dependent upon nervous, hepatic, and pancreatic disturbances or disease. It is not necessary to discuss some of the recent views of the pathology of this affection, since the object is but to call attention to the wellgrounded value of the derivatives of opium in certain forms of diabetes, the reason of which we are unable to determine until the pathologist discovers their origin, but it will probably be found to be those cases of diabetes dependent upon hepatic disorder which are benefited by these drugs. Some time ago Mitchell Bruce carried out the most elaborate and careful clinical research that is extant upon this topic, in order to determine whether morphine or codeine was the most useful alkaloid in diabetes. To be sure he only had two individuals on which to make his studies, but the thoroughness of his methods eliminated every error except that of personal idiosyncrasy, which, unfortunately, still remains. His research is worthy of note not only because of its results, but by reason of its thoroughness.

In the first place, the patients were put upon

a rigid antidiabetic diet, without any medicine except a little camphor-water, until the elimination of sugar reached the lowest constant point. When this point was reached the diet was still continued, without drugs, for several additional days to be sure that the quantity of sugar was constant without doubt, and then codeine was given at first in small doses, which were gradually increased until the full amount possible to give was reached. During all this time careful estimations of sugar and urea were made and the quantity of urine measured. After the effect of maximum doses of codeine had been decided upon, the doses were gradually decreased, and finally stopped entirely. The codeine made a marked decrease in the quantity of the urine and sugar, and the greatest decrease was noted in both the patients on the fiftieth day of treatment, when the doses of codeine amounted to the large amounts of 27 and 22 grains respectively per diem. There was practically never a total disappearance of sugar even then, but there was a very great gain in body-weight in each instance. In neither case did the codeine cause much nervous mental disorder. Far more interesting were the results reached from the use of morphine acetate, for the effect produced was much more rapid and powerful. The quantity of the urine was decreased nearly fifty per cent. and the specific gravity quite fifty per cent. Fortunately, too, there was no drowsiness or heaviness from the morphine, but, on the other hand, an increased mental activity. The particularly interesting points for us to remember as practical physicians are that morphine exercised far more control than codeine, although given in one-fourth the dose, only 6 grains of morphine acetate being used each day. Finally, we are impressed with four important facts: first, that large doses of both these alkaloids are needed for the control of diabetes; second, that the condition of diabetes enables the patient to rapidly grow accustomed to these drugs; third, that they rarely cause excessive mental symptoms; and, fourth, that the morphine should be used by the mouth every three or four hours, and ought not to be given hypodermically. If given hypodermically it affects the entire system equally, but if placed in the stomach it passes directly through the portal system into the liver, where it acts at once and in comparatively concentrated form on the glycogenic function of this organ. Further than this, its full action on the liver prevents it from exercising great power over the nervous system, since it is in the liver that the drug is chiefly oxidized or destroyed. Perhaps it is worth while to note one more point in relation to this subject,—namely, that while morphine and codeine produce great improvement in many cases of diabetes mellitus, they seldom succeed in removing the last traces of sugar.

Another use of morphine not generally spoken of in the text-books or taught to medical students by lecturers is its employment for the relief of certain cases of cardiac disease, and the subject is brought to your attention rather for the purpose of eliciting an expression of opinion from those who are kind enough to listen to the address than to express one on my own responsibility. Those who have used morphine most under these circumstances assert that its influence is felt to the greatest advantage when the mitral valves are diseased, yet it certainly acts very well in aortic lesions. one case, a man of forty-nine years, who was suffering from aortic disease of the most marked type, with dyspnœa and exhaustion, the severity of which was absolutely terrifying, the hypodermic injection of a quarter of a grain permitted sleep and temporarily saved life on several successive nights. In this case there was wellmarked dropsy of the lower extremities sufficient to necessitate acupuncture for his relief, and there was also well-marked evidence of pulmonary cedema, which had to be relieved from time to time by cupping. The relief of the gasping respiration, of the wild desire for air, the dropping of the head from exhausting loss of sleep, to be followed by wild efforts to get the breath,—the relief of these distressing symptoms in this and other cases has done much towards increasing my confidence in morphine at such times. On the other hand, I have seen results follow its use by no means so desirable and in cases in which beforehand it seemed impossible to discover any particular sign to contraindicate its use. Not only is this true, but in one case of mitral regurgitation use of the drug was rapidly followed by death. The patient soon fell asleep, as quietly as a child, sitting in an easychair, and was found dead when the attendant awoke after several hours of sleep following prolonged nursing. It is only fair to say that the man's condition was so serious that death would perhaps have come as early without the drug and with far more suffering. Perhaps in the discussion which I hope will follow my paper some one may give his views as to the points which should govern the use of morphine at such times. That it does great good at certain times in heart-disease is certain. Its use in this way is rational, for the drug has been proved, both experimentally and clinically, to be an active heart-stimulant.

In the treatment of the kidney and bladder

we are often sadly at a loss to know what remedies to use, for our therapeutic armamentarium is certainly deficient in this direction. At the risk of speaking once more of a subject which is well known to you all, I wish to mention cantharides. It is so old a remedy for genitourinary conditions that its mention seems almost ridiculous, yet its internal employment is so unusual, comparatively speaking, that it may be said to have dropped out of use undeservedly. Its influence upon diuresis was first impressed upon me several years ago when using it externally in the form of cantharidal collodion for the relief of renal congestion. Its application resulted in such an increase in urinary flow that it was difficult to believe that the mere counterirritation could have produced such free diuresis; and remembering that of all the methods of applying cantharides externally this one usually resulted in the greatest absorption, I at once followed the indication given me and the advice offered by some writers, and gave tincture of cantharides internally. For several years I have resorted to this method in numerous cases with the greatest satisfaction, and regard it as one of the most reliable remedial measures we have within certain distinct limitations, which are some of them as follows:

First, it will be found in many cases of kidney-trouble following acute inflammation that the kidney has practically recovered from its disease, but is in a condition of atony and inactivity because of the reaction which has followed its period of temporary excitement. The urine may be passed either in excessive quantity or in too small amounts, and in other instances may contain albumin without casts. administration of from one to three drops of the tincture of cantharides three times a day, well diluted with water, will frequently regulate the urinary flow and the albumin will disappear. Similarly, in cases of parenchymatous nephritis, where the kidney is large, baggy, and relaxed, a most extraordinary increase in urinary flow may be produced by this drug. I have recently had under my care, in the wards of the Jefferson Hospital, a man from the interior portion of the State of Pennsylvania, who, on admittance, was passing at the most sixteen ounces At the end of ten days the of urine a day. urinary flow, under the administration of cantharides, one to three drops three times a day, had increased to no less than five pints in the twenty-There had been a very great decrease in the dropsical swelling in the lower extremities, his face had regained its normal size, and the puffiness under the eyes had entirely disappeared. After this treatment had been continued for about three weeks, a newer drug, "diuretin," was substituted for the sake of the experiment, although my previous experience with this newer remedy had been such as to discourage me in its use. Within forty-eight hours after the cantharides was stopped the quantity of urine decreased to thirty-nine ounces, and remained at that point until, four or five days later, the cantharides was renewed, when it at once rose to five pints, the point at which it now remains.

If, in these cases of chronic renal trouble, the dropsical swelling tends to produce alterations in the nutrition of the skin of such a character that a more or less severe eczema rubrum affects the lower extremities, particularly over the tibia, cantharides proves particularly useful, for, as is well known to dermatologists, this drug, when administered internally, may exercise a very favorable influence upon the skin. In this particular instance it does good not only by increasing renal activity, but by stimulating the skin to improved nutrition.

Cantharides has also proved a useful drug in my hands in the treatment of incontinence of urine dependent upon lack of control of the vesical sphincter, as, for example, in those cases where either laughter or sudden jarring of the body permits of the escape of a few drops of urine, or in the more distressing cases of phthisis, where with each violent attack of coughing a similar incontinence ensues. A drop of cantharides every eight hours or every six hours in the twenty-four in many of these cases is enough to give relief, and such relief will always be accompanied by the heart-felt thanks of the patient. Although I have used it now in a large number of cases, I have failed to find in one of these cases that this dose produced irritability of the stomach or of the bladder. It is hardly necessary for me to add that the drug should not be given should the stomach, bladder, or kidneys already be in a condition of inflammation. It is also hardly necessary for me to speak to you of the more frequent employment of cantharides for the relief of sexual impotence. We are so apt at the present time to rely upon phosphorus, nux vomica, and damiana for this purpose that we are apt to neglect this remedy. Within the last few months I have resorted to its employment in the cases where these more popular remedies have failed, with remarkable results, -sufficiently favorable, at least, to make me remember it and try it in all future cases of this kind which may come to my hands.

A remedy which by comparison is as new as ----harides is old, is ichthyol, yet its great

value in a very wide range of cases is so well recognized that it is largely used. Its use has been to a great extent practically empirical, since even now we scarcely know more of it than that it acts differently from all compounds containing sulphur; but I am hopeful that a research begun at my suggestion by Dr. Kyle, of the Jefferson Medical College, may place its use on a more rational basis. So far it seems probable that the wonderful power of ichthyol in dispersing indurations and swellings depends upon its power of dissolving the intercellular cement-substance and so setting free newly-formed cells, so that they are readily dispersed.

Whatever the explanation of its action may be, it will certainly give good results both when applied to acute and chronic inflammatory processes. An ichthyol dressing of twenty-five per cent. ichthyol and seventy-five per cent. lanoline, in cases of erysipelas, is the best application by long odds with which I am acquainted, and in acute articular rheumatism forms the most efficient application for the relief of the heat, swelling, redness, and pain. In this disease as strong an ointment as fifty per cent. is often better than one of twenty-five per cent. After it is applied the affected part should be wrapped in patent lint heavily smeared with the same mixture. From its use in a large number of cases of acute rheumatism I have learned to regard it as a remedy almost as valuable as the salicylates. For the purpose of relieving indurated glands, as after bubo or cervical adenitis, or the limbering up of the sheaths of muscles stiffened by strain, cold, or rheumatic tendency, ichthyol has certainly a most important place. Similarly, I have frequently seen ichthyol remove obstinate skin-affections either when they were dry, superficial, and scaly, or when, through chronic eczema, marked subdermal induration arrested the healing process. Of the internal use of ichthyol I can speak but little. Although Continental writers claim good results from its employment internally, the few cases to which I have given it have not seemed much benefited.

The local anæsthetic power of iodoform is very frequently overlooked, particularly since cocaine has become so favorite a drug; yet in many respects iodoform is far superior to this vegetable alkaloid in certain conditions. In diseased conditions of the rectal mucous membrane, where cocaine cannot be used successfully because of the resistance of this membrane to its penetration, iodoform acts as a valuable substitute. Not only will it often give relief in cases of fissure of the anus, and permit a painless movement of the bowels, but

it will simultaneously permit the employment of a curative application. Very frequently the pain in the rectum after operation for lacerated cervix uteri and perineum will be for some days absolutely insupportable, particularly if the laceration has existed for some years, so that the parts have become somewhat relaxed. All forms of rectal pain are badly borne, and this form often demands the use of an opium suppository, which, in turn, in susceptible persons soon produces nausea, depression, and even In cases where there is reason to believe that opium will act in this manner, an iodoform suppository of 5 grains, repeated two or three times a day, will relieve the discomfort without developing systemic symptoms. method of treatment will often relieve the weight and fulness of the rectum due to the presence of excoriated or irritable hemorrhoids. In addition to the local anæsthetic effect, we also obtain the alterative and antiseptic influence of the drug.

Finally, I shall close this paper by calling your attention to two points which are not as clearly understood as they should be, chiefly because they are not carefully thought out. Several years ago a series of clinical and experimental studies by Dr. Martin and myself made me feel sure that certain teachings universally received and adopted as correct were erroneous. I refer, first, to the methods usually followed in the resuscitation of persons who have ceased breathing while under the influence of an anæsthetic, and, second, to the methods used when large enemata are being employed for the purpose of washing out or overcoming obstruction of the rectum or colon. A year ago, in Cincinnati, in the address in medicine before the Mississippi Valley Medical Association, I spoke of this subject, and in view of its importance trust you will pardon my doing so a second time.

It is now many years since the custom of stimulating the phrenic nerves was introduced in cases of anæsthesia which had stopped breathing, with the idea that in this way the surgeon would cause the chief muscle of respiration, the diaphragm, to contract, and so restore this function. At first glance such a procedure savors of usefulness, but a second thought at once discloses the illogical basis on which such a method must rest. In the first place it is not the peripheral or functionating respiratory apparatus which is at fault at such times, but the central apparatus, and, therefore, the stimulation of the nerve by the electricity can only bring about a single contraction, which, unless followed by normal ones, would be useless. Secondly, even

this value does not exist in reality, because it is practically impossible to stimulate the phrenic. owing to its situation in the neck, unless we employ a very strong current, one sufficiently strong to diffuse itself through the tissues and irritate to a greater degree the vagus. Further than this, there is yet another fallacy in this treatment, because the surgeon always, at least in my experience, applies the current from a faradic battery, and uses the rapidly-interrupted or irritating current. If, as is taught, this really does influence the phrenic nerve, then this rapidly-interrupted current will cause a tetanic spasm of the diaphragm, just as it will tetanize other muscles. If any current is to be used for stimulating the phrenic nerve so as to produce diaphragmatic contraction, it should be the slowly-interrupted current, so slowly interrupted as to send shocks in time with normal respiration. Not only is the use of the rapidly-interrupted current therefore useless, but it is harmful, because it irritates, as I have said, the vagus nerve at a time when that nerve is either too active because of shock, or the heart is engorged with blood, either from direct depression of its walls or by reason of pulmonary obstruction. The effect of irritation of the vagus, both physiologically and pathologically, is to slow or stop the heart and hold the ventricles in wide diastole or dilatation, and if we succeed in stimulating the phrenic we will, as I have said, stimulate the vagus and seriously impair the integrity of the cardiac function. It is, of course, true that it is practically impossible to arrest the heart long enough to cause death through electrical stimulation of the vagus; but in cases of cardiac failure, the addition of this vagal inhibition to the true failure already manifest may be the last straw to break the heart's back.

The diagram which I show here is a correct representation of a tracing taken from the carotid artery of a dog, and shows the temporary cardiac inhibition when the current is turned on. Before I have reached this point in my paper there are doubtless a number of the hearers who recalled cases in which this time-honored custom seemed to render good service in their hands. I have no doubt that it has done so, but I am sure, if it has, the result has been obtained indirectly and not directly,—namely, by the reflex activity started up through the application of the electricity to the skin of the neck. This same effect is sought after in the slapping with wet towels or the use of the alternate dash of hot and cold water, and in the cases where the application of an electrode to the phrenic region might as well be supplanted by its application to some other important area of sensory nervefibres, and not where, in attempting to produce a useless phrenic stimulation, we develop a harmful vagal irritation.

The second subject, that of injections into the bowel, is equally interesting. Very important points to be decided in connection with this subject are the amount of pressure which can be used, the length of time during which the injection should be continued, and, finally, the temperature of the fluid injected.

Although it may strike you as being self-evident, a moment's recollection will show you that rectal injections are generally performed not only with force, but with rapidity; but this is wrong, as clinical experience and my experiments have proved. By the use of a fountain-syringe attached to a mercurial manometer the number of pounds' pressure that it is permissible to use was easily estimated. It has been claimed that certain pressures will cause rupture of the peritoneal coat of the intestines, but we failed in the dog to produce this lesion by any pressure we could employ, since before this occurred the liquid passed through the stomach and mouth.

To employ a pressure exceeding eight pounds is, however, distinctly dangerous, not because the intestinal wall in health will not stand this, as a rule, but because it is near the injury line, and if any disease or softening of the bowel exist, it is almost certain to cause rupture. A pressure of from two to five pounds is, as a rule, as much as may be employed, and this pressure should be obtained by degrees, starting the injection at such a point of pressure that it amounts to hardly more than a trickle, and increasing the pressure as the antagonism of the bowel is overcome. Finally, when the bowel is fully distended up to the point of obstruction, the pressure on the no longer moving column of water may be increased, if necessary, to six or eight pounds by raising the bag of water. In infants, in whom invagination so often occurs, a pressure greater than two pounds is dangerous, and it is of vital importance that the pressure be employed properly, otherwise it will do more harm than good in several ways. As a rule, in our anxiety to give the patient relief at once, we are inclined to use too much force and too large a bulk of water, and think that active force, if I may use such a term, is to be resorted to. Those of you who have seen these cases have learned by experience the harmfulness of such measures, and have also learned how great is the expulsive power of the bowel when it is excited to contraction. If this power be brought into activity, it will be almost impossible to inject fluid into the rectum, and, worse than all, the muscular

fibres of the intussuscipiens take a still tighter grasp of the intussusceptum.

In order to determine the exact amount of pressure permissible in such cases, Dr. Martin and myself carried out a series of experiments, and found from the very first that the force exercised is a comparatively unimportant factor compared with speed,-that is to say, an injection of two quarts of water, made very slowly, was less apt to cause intestinal opposition than one pint rapidly sent into the gut. This is, perhaps, the most important point to be remembered in our treatment. At the risk of saying that which is trite, let me call your attention to the dangerous practice of using a Davidson or any other kind of artificial force syringe in the treatment of this class of cases. We know of three unreported cases of rupture of the bowel and death from the employment of the Davidson syringe for this purpose, because the amount of force used was indeterminable, and because it was injected by a jerking instead of a constant flow. In the "Medico-Chirurgical Transactions," fifty-ninth volume, there are many of these accidents recorded. The amount of fluid injected should be large, and if it is impossible to get a large amount into the bowel, it is probably because the inflow has been so rapid as to excite intestinal opposition. If, by a slow trickle of water into the bowel, gradually increasing the pressure, we are unable to give relief in forty-five minutes, it is necessary either to give this treatment up as useless or else allow the liquid to flow away, and resort to the measure again in some hours. Practical experience has shown that the second or third injections sometimes succeed, probably because they are more skilfully given and the first has prepared the way for the others, but it is to be remembered that the chances are best with the first injection, if it is properly given. Frequently-repeated small injections are absolutely unjustifiable.

Finally, I cannot leave this subject without saying a word concerning the temperature of the injected liquid and its constitution. An injection of this kind goes into the very heat-citadels of the body, and if too cold, as it often is, produces dangerous chilling of organs which are ordinarily specially protected from cold by the omental apron and intestines. By repeated experiment we found that water at 65° F. lowered the bodily heat three degrees in thirty minutes. The use of colder water than this (52° F.) resulted in death in twelve hours, and the post-mortem showed intense congestion of the colon, which contained bloody mucus.

The use of water of too high a temperature

is also dangerous, lest it produce heat-stroke. Of course, no one would use water hot enough to produce local harm, yet it is necessary to have just enough heat and no more. In our first experiment we proved that the use of water at 115° F. caused in twenty-five minutes a rise of bodily temperature in the axilla of nearly five degrees, and developed marked symptoms of heat dyspnœa. The temperature which it is right to employ we found to be 101° to 103° F. as it entered the bowel, or even as high as 104° F. in the water-bag, if a long tube was used, as under these circumstances the water is rapidly cooled. An interesting result of these experiments as to heat is that, when cold water was used, it took four times as long to make the injection as when moderately warm water was

If very large injections are used, a normal saline solution of 7 per 1000 should be employed to avoid the abstraction of vital salts from the intestinal wall, with consequent passage of water into the tissues, making them boggy, according to the law of osmosis.

In regard to the effect of distention of the bowel by injection on the circulation and respiration, we found practically none, but the passage of large amounts of warmed fluid into the abdominal cavity causes death rapidly.

As I said to you in the beginning of my paper, I fear that much of what I have said to you will not have appeared new, and if this is the case, I can only excuse myself by the reiteration of the fact that advantages are sometimes gained by giving up the hunt for new drugs in order that we may take account of stock of older remedies, which in our hurry to obtain new ones have been unjustly ignored.

## THE ACTION OF OLEIC CREOSOTE.

Oleocressote is an oleic ether of creosote. It is obtained by the interaction of oleic acid and creosote, through the influence of dehydrating substances, such as the trichloride of phosphorus, the oxychloride of phosphorus, and others.

From an elaborate pharmacological study of this new substance, J. L. PREVOST (*Revue Médicale de la Suisse Romande*, February 20, 1893) has dfawn the following conclusions:

- 1. Creosote in oleic combination (oleocreosote) is tolerated in larger doses than when it is simply mixed with oil, and does not cause gastro-intestinal disturbances.
  - 2. The toxicity of oleocreosote is much less

pronounced than that of creosote simply dissolved in oil.

- 3. Experiments show that hypodermic injections of oleocreosote are followed by elimination of the drug through the urine. This elimination occurs at a later period and lasts longer than when injections of a simple mixture of oil and creosote are made.
- 4. Administered by the stomach, oleocreosote is evidently absorbed, and gives origin to an elimination of phenol, but to a considerably less extent than when the new drug is given in simple oily solution. The results of the experiments show that oleocreosote is much less toxic than the simple oily mixture; that it is absorbed from both the intestinal tract and the cellular tissue, and is eliminated by the urine in the form of phenols.

These researches, however, only show the behavior of the oleocreosote from pharmacological and toxicological points of view; but no deductions can yet be made in regard to the therapeutic value of the new substance when compared to the simple oily solution. To form an opinion in this respect clinical observations are wanting.

# THE HYPODERMIC INJECTIONS OF SERUM IN THE TREATMENT OF PNEUMONIA.

In an elaborate article, H. AUDEOUD (Revue Médicale de la Suisse Romande, February 20, 1893) details three interesting cases of pneumonia treated by the subcutaneous injections of serum. The results were satisfactory, and it is shown by temperature charts that the injections produced the expected crises, these being followed by a decline of the febrile temperature and an amelioration of the rest of the symptoms. The injections were generally of 2 cubic centimetres each, the blood being taken from convalescing pneumonic patients. The ages of the three patients observed, all males, were fifty-six, fifty-two, and thirty-nine respectively. The author preferred the subcutaneous to the intravenous method, owing to the possibility of causing emboli by the latter one. He believes that the serum of the blood of patients convalescing from a frank pneumonia must contain the antipneumotoxine. No definite conclusions, however, are arrived at by the author, but he remarks that his results so far corroborate those previously obtained by Klemperer, Foa, and Janson. Reference is made to the observation published by Hughes and Carter in the GAZETTE of October 15, 1892.

# The Therapeutic Gazette

EDITED BY H. A. HARE, M.D. GENERAL THERAPRUTICS.

With special departments under the charge of G. E. DE SCHWEINITZ, M.D., OPHTHALMIC AND AURAL THERAPEUTICS.

AND EDWARD MARTIN, M.D., SURGICAL AND GENITO-URINARY THERAPEUTICS.

#### GEO. S. DAVIS.

Medical Publisher, Box 470, DETROIT, MICH.

Philadelphia, 714 Filbert Street,

SUBSCRIPTION RATES FOR 1893.

THERAPEUTIC GAZETTE (postage included).....\$2.00 THERAPEUTIC GAZETTE with MEDICAL AGE ..... 2.50 THERAPEUTIC GAZETTE with WESTERN MEDICAL

Reporter..... 2.50

THERAPEUTIC GAZETTE with BULLETIN OF PHAR-

MACY...... 2.50 THERAPEUTIC GAZETTE with AMERICAN LANCET 3.25 THERAPEUTIC GAZETTE with AGE and LANCET... 4.00

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136 Gower Street, London. Price 108. Remittances may be made either by Postal Order or Stamps.

Price to Foreign Subscribers direct (postage included), \$2.50 (ro shillings). English postage-stamps received on remittances.

Editorial communications should be addressed 222 South Fifteenth Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

Authors will receive reprints in pamphlet form, without charge, provided the request for them be written on the articles sent.

Business communications should be addressed to the Publishers.

## Leading Articles.

ADDITIONAL MEASURES TO ENTERO-CLYSIS IN THE TREATMENT OF THE SUMMER DIARRHŒA OF INFANTS.

F there ever was a well-worn subject that has been discussed year after year in the original and editorial columns of almost every medical journal, surely the subject of the treatment of the summer diarrhoea of infants is one which is well worn, and yet one which never ceases to be of importance and interest to the general practitioner. This interest depends not only upon the fact that the condition is one which he constantly meets with in his general practice, and which demands his very best efforts for its control, but also because the progress of therapeutics has been so rapid in the direction of the treatment of this condition that each year ands to our knowledge of how to treat it success-

fully as well as to our information concerning its etiology.

Perhaps the most important prophylactic and therapeutic point which has been gained in the therapy of this condition has been the practical application of sterilized milk to the feeding of those infants who could not be fed at the breast; and, secondly, the introduction of that most valuable aid to proper alimentation of the sick,namely, the peptonizing of foods. These two methods-namely, sterilization and peptonization-may be considered as the important primary department of the treatment of summer diarrhoea in children, or, for that matter, for the diarrhœa of adults. The methods which are employed for sterilization and peptonization are. fortunately, already so familiar to all the profession that it is not necessary at this time to reiterate If a case of cholera infantum falls into the hands of a practitioner who has not had much experience in the employment of these processes, he can find carefully-prepared directions accompanying the comparatively cheap and useful sterilizing apparatus which can be bought in various forms in almost every drugstore, while around the box containing the peptonizing tablets he will find carefully-printed directions as to the preparation of the nitrogenous food so as to render its assimilation more easy. Aside from these two therapeutic points, our therapeutics of this condition has certainly advanced rapidly so far as drugs are concerned, and this advance, like that just mentioned, has been a double one, consisting in a better idea of how to use those drugs which for years have been known to the medical profession, though perhaps seldom employed in this condition, and the introduction of the newer remedies which possess the power of producing, to some extent at least, intestinal antisepsis.

Three of the older remedies which are invaluable in the treatment of intestinal disorders of childhood are arsenic, corrosive sublimate, and While within the last year or podophyllin. two a number of absurd papers have been published lauding to the skies arsenical preparations which it was claimed would cure all cases of serous diarrhoea, and while this excessive laudation has resulted only in disappointment to those who were carried away with it, it nevertheless remains true that in children who have a constant tendency to laxity of the bowels, particularly during hot weather, minute doses of Fowler's solution, arsenous acid, or the arsenite of copper tend to correct this tendency. These drugs are valuable rather as prophylactics than as efficient remedies when the diarrhœa

has once thoroughly started. By minute doses we do not mean so small a quantity as  $\frac{1}{1000}$  or  $\frac{1}{1000}$  of a grain, but about  $\frac{1}{100}$  to  $\frac{1}{200}$  of a grain of arsenous acid, or the arsenite of copper, or  $\frac{1}{4}$  to 1 drop of Fowler's solution, according to the age of the child. If there is any evidence of intestinal irritation and inflammation due to the presence of irritating foods, we believe that arsenic in all forms is contraindicated. It is rather in those cases where there seems to be a leakage of liquid into the bowel that its value becomes apparent.

Sometimes in these cases of summer diarrhoea in children the physician notices that a very large proportion of the movement is not serous, but mucous. It is hardly necessary to say that the first thing to be done under these circumstances is to give some drug which will sweep from the bowel not only offending food which is predisposing to intestinal irritation, but also any excess of mucus that may already have been formed by irritation of the mucous membrane. There are two drugs which fulfil this indication better than any others,—rhubarb, in the form of the spiced syrup, in the dose of one teaspoonful to a tablespoonful, according to the age of the child, or, in very young children, castor oil in the dose of a teaspoonful, or a dessertspoonful in children of three years or more. Both these drugs not only act upon the bowel without inflaming or irritating it, but in addition have a distinct constipating tendency after their primary influence has been exerted. The saline cathartics should never he used under these circumstances. The mucus having been thoroughly expelled from the bowel, or even before it has been removed by the purgative, and at the same time that the purgative is administered, it is well to give  $\frac{1}{600}$  or  $\frac{1}{200}$ , or even  $\frac{1}{100}$  of a grain of corrosive sublimate three times a day, or  $\frac{1}{1000}$  of a grain every two or three hours, well diluted. In some way corrosive sublimate seems to exercise a peculiarly favorable influence where mucus is present, and while the dose given may seem so infinitesimal as to be useless, in reality it is not so, when we remember that a solution of 1 to 20,000 or 1 to 30,000 of this drug possesses distinct antiseptic properties.

The third drug—podophyllin—has its sphere of usefulness not so much in the mucous diarrhea as in the serous form. In many of these cases as the diarrhea progresses it will be noted that the stools are absolutely colorless, a slight deposit, looking like wet, powdered chalk, being found on the diaper, surrounded by an area of more or less moisture, and having a peculiar mousey odor; the ordinary coloring of fæcal matter is totally absent, and its absence de-

notes an entire absence of the biliary secretion and probably of the secretion of the intestinal Under these circumstances there is but one substance which will stimulate these glands to proper secretion without at the same time weakening the patient as would calomel, and that substance is podophyllin, given in the dose of  $\frac{1}{20}$  to  $\frac{1}{10}$  of a grain every two hours, until the first signs of color come back to the movements. The physician need not fear that the podophyllin, if given well diluted with alcohol and water, will produce disagreeable symptoms or increase the diarrhoea. He should direct that the diapers be carefully preserved in the order in which they are used, and at each visit should examine them carefully. The first streak of color on the diaper indicates that the podophyllin is beginning to stimulate hepatic action, and should be regarded as favorable a sign as is the black, tarry stool of dysentery when large doses of ipecac are acting properly. As long as the perfectly-colorless passages continue the danger of the case is imminent; its chances for recovery are in direct ratio to the amount of color which is seen. If the biliary or other color comes to the passage, it is the proper time to administer astringent substances, but previous to that their administration is not only useless, but apparently harmful.

It is not necessary at this time to speak of the necessity of using the hot bath or hot applications in the advanced stages of summer diarrhœa of infants, for even in those cases where the rectal temperature shows that the centre of the child's body is at fever heat, if the child is quickly dipped in the hot water, the application of the heat to the surface draws the hot blood from the centres of the body, equalizes the circulation, and indirectly reduces temperature by increasing the radiation of heat. As we have just said, the presence of a high central temperature contraindicates a prolonged hot bath, but in collapse a prolonged hot bath is often very useful. nearly all cases the hot bath will remove the nervous jactitations and permit of a quiet sleep, which is often exceedingly important to the patient.

Finally, it may be laid down as a rule that astringents are not to be given to these cases, and that as soon as the bowel is free from irritating material the diarrhea will cease.

By far the best method to be employed in every case, with or without those measures which have just been named, is enteroclysis, as described in the GAZETTE for October, 1892, or in the article of Dr. Müller, just concluded in this number.

THE ACTUAL CAUTERY IN THE TREAT-MENT OF CORNEAL ULCERS.

THE treatment of purulent ulcers of the cornea by cauterization with the actual cautery is a therapeutic measure so well established that it would seem the last word which is needed had been said upon this subject. Occasionally, however, we find recorded expressions calculated to throw doubt upon the value of the method, or, at least, upon its value as compared with the results obtained by other procedures. Thus, Valude (Bulletin Clinique Nationale Ophthalmologique de l'Hospice des Ouinze-Vingts, année 1892; Paris, 1893, p. 39) remarks, "I am less and less a partisan of the application of the actual cautery to the cornea; as Professor Snellen has said to the recent Netherland Congress, the cauterization damages the cornea more than the ulceration itself. I make an exception of ulcers complicated with dacryocystitis, which threaten the eye with panophthalmitis and must be arrested at any price."

It is true that the great majority of corneal ulcers do not require destruction of the affected tissue by chemical or actual cauterization; disinfection of the conjunctival sac, atropine (under some circumstances, eserine), protective or compressing bandages, and suitable constitutional remedies suffice. For those ulcers, however, as Fuch's expresses it, "which, from the purulent hue, or from the strong infiltration of their surrounding parts, show a rapidlyprogressive character, we must employ other remedies. These are hot compresses, iodoform, the actual cautery, and paracentesis of the anterior chamber." Now a large amount of evidence has accumulated which proves that the actual cautery is the most potent of these four remedies or measures for arresting many forms of rapidly-progressive ulcers of the cornea, and not alone those complicated with dacryocystitis; therefore the objection to the method evidently is not that it fails to check the ulceration, but that the resulting cicatrix is more dense than that which results when healing has been secured by some other procedure.

This question has been carefully studied by those who have most strongly endorsed the use of the actual cautery. It will be remembered that Nieden, when he reported his first series of one hundred cases of corneal ulcer treated with the actual cautery, eighty-three per cent. of which were of a serious nature, and more than sixty per cent. being hypopyon ulcers, dwelt upon two points,—namely, that not a single eye

had been lost, although other methods showed from 1.4 per cent. to 11.5 per cent. of phthisis bulbi, and that the ulcers so treated exhibited only a slight tendency to leave the marked cicatricial opacities which otherwise so commonly occur after these processes. In support of this position he quotes the experiments of Sattler, demonstrating the process of repair in corneal tissue after the application of the actual cautery, and calls attention to the fact that a true leucoma occurred in only twelve of his cases, the remainder having healed with more or less marked maculas. Necessarily, as Fuchs says, "an opacity remains permanently at the cauterized spot; but since we cauterize only such places as would otherwise go on to purulent disintegration, the final opacity is not greater than it would have been without the application." In the belief of Nieden the opacity is not so great, and this belief is shared by many surgeons.

In the cases to which the actual cautery is applicable, the class which is generally designated "infectious ulcers" heads the list. Their characteristics are too well known to need repetition. The method, however, finds application in the management of so-called scrofulous ulcers when they are deep and tend to spread, of sluggish corneal infiltrations which decline to heal under ordinary measures, of fascicular keratitis, and of certain types of herpetic ulceration (dendritic keratitis). These, as Nieden declares, may also be classified with the infectious types or those depending upon mycotic infection.

So far as the technique is concerned, it is summed up in the sentence previously quoted from Fuchs, to "cauterize only such places as would otherwise go on to purulent disintegration." Since the introduction of fluorescine, the area requiring destruction can be exactly outlined, and there is no need to follow the advice which is sometimes, but, as we think, improperly, given to carry the burning into sound corneal tissue. While the cauterization should be thorough in extensive ulceration, if excessive reaction is feared it often suffices to destroy the most infiltrated margin of the lesion, or that part from which the process is most likely to spread.

Far from being a "partisan" of any method of treating corneal ulcers, we are nevertheless persuaded that the application of the actual cautery is not limited to those types of ulcerated keratitis complicated with dacryocystitis, and that its use in suitable cases is not followed by damage more extensive than the ulcer itself would produce.

THE ULTIMATE RESULTS OF ORCHIDO-PEXY IN CASES OF UNDESCENDED TESTICLE.

INDESCENDED testicle, though not rendering the bearer of this malformation impotent, even, indeed, appearing to increase sexual desire and power of intercourse, is accompanied by sterility, the glands remaining small in size and physiologically inactive. the theory that this lack of development is due to malposition, the operation of orchidopexy, or placing the testicle in its normal position, has been proposed, and, in so far as the direct results are concerned, has been practised successfully many times. Briefly outlined, the operation consists in cutting down upon the testicle, which is usually found in the inguinal canal, though it may be entirely within the abdominal cavity, freeing it from its attachments, forming a sac for it at the expense of the peritoneum if this be possible, drawing it into the scrotum, and anchoring it in this position. Reporters are agreed in stating that the testicle thus placed in its normal position increases in size, and argue that ultimately it will become physiologically active; but since the operation, at least in its general recognition as a proper surgical procedure, is modern, and since it is usually performed during infancy, and incidentally in the course of surgical procedures adapted to the relief of strangulated hernias, which so often complicate these ectopic testicles, the ultimate result as to function has remained a matter of conjecture. Some light is thrown upon the question by a communication from Guelliot. He operated upon a boy, aged fifteen and a half years, suffering from double abdominal ectopy and lateral eventration. the course of the operation for this last condition the left testicle was carried from the abdominal cavity and secured in the scrotum, a tunica vaginalis having been formed at the expense of the parietal peritoneum. Four months later the testicle was found slightly adherent near the root of the penis, but not exhibiting a tendency to retract within the inguinal canal; it had distinctly increased in size. Two years later the patient again came under observation. The right testicle was still within the abdomen; the left was freely movable beneath the skin of the scrotum, and was of normal adult size. Pubic hair was growing from the upper portion of the left scrotum and the neighboring pubic surface; the corresponding regions of the right side were absolutely free of hair. The patient had vigorous erections, and ejaculated a fluid quite similar in appearance to normal semen.

On microscopic examination of this fluid it was found to contain flat epithelial cells, pigmented granular masses, and polyhedric and acicular crystals. At first spermatozoa seemed to be absent, but on careful, prolonged examination a few were found, some absolutely normal in appearance, others deformed and broken.

This observation, though strongly supporting those who advocate the operation of orchidopexy from a functional stand-point, by no means conclusively settles the question as to the beneficial effect of surgical interference.

It is only when such cases are multiplied that we can judge with reasonable certainty as to the relation between cause and effect. In the mean time it seems clear that where the testicle has not descended by the tenth or twelfth year, there is almost no chance of this occurring spontaneously, and that the operation of orchidopexy is definitely indicated. Before the testicle is anchored in its proper position all the fibres of the cremaster should be divided, since in some cases contraction of the muscle has drawn the testicle back into the inguinal canal after the external wound was healed.

## THE ABUSE OF MEDICAL CONFIDENCE.

N the New York Medical Journal for January 28, 1893, Dr. W. A. Hammond published an article entitled "On Certain Organic Extracts, their Preparation, and Physiological and Therapeutical Effects," in which he highly recommended the employment of a number of animal extracts in the treatment of various diseases. Statements of somewhat similar preparations had been previously made by Brown-Séquard, Constantin Paul, and others in France, and the professional mind was therefore ready to accept with little scrutiny assertions of an encouraging character if they originated from the pen of a member of the profession who was widely known and who was supposed to be reliable in scientific statement. Physicians are forced to accept without careful study the statements of those who, by training, are specially qualified to decide as to the value of new remedies, and the position occupied by the expert is therefore peculiarly sacred in that he has the implicit trust of his fellows. Doubtless it was the recognition of this fact which caused the editor of the New York Medical Journal to admit . to his columns the article in question without careful inquiry as to there being a possible commercial bias in its intent. Unfortunately, there is such a possibility, and we give the facts in order that our readers may decide for themlectual activity is nothing but the result merely of impulsiveness, his acts being really worthless. The victim loses the consciousness of his personal worth and becomes a subject of flattery and illusionary thoughts and feelings. So much for acute poisoning. In regard to chronic cases, patients become general paralytics and monomaniacs, and the drug, far from sharpening their mental faculties (as they in their distorted minds believe), causes in them anæmia, general debility, and intellectual weakness. therapeutic means to combat all these cases appear to be sufficiently plain, and, among others, the author recommends the establishment of severe penalties for opium-smoking habitues, and the removal of these from places where the custom becomes almost a law.

#### THE PHYSIOLOGICAL ACTIONS OF APO-CODEINE.

A study of the physiological actions of apocodeine is contributed by L. Guinard (Lyon Médical, May 21 and June 4, 1893). Important conclusions are drawn by the author. Apocodeine is a somniferous medicament, producing sleep without previous marked excitation, and especially without provoking nausea and vomiting. The sleep is slight and fugacious; it cannot be compared to the profound narcosis caused by morphine. A dog under the influence of apocodeine can be easily awakened, the animal being apparently in a state of quiet and not of sleep. In soporific doses, the drug slightly modifies sensibility and the conductibility of the nerves. The semiparalysis of the hind extremities, not observed by Claude Bernard in the case of codeine, always appears after the administration of large doses of apocodeine, but is not very marked. After the elimination of the drug, which appears to be rapid, the return to full consciousness is unattended, in the animal, by the hebetude, the distraction, and the stupor so common under the action of morphine. Like codeine, however, apocodeine is able to increase reflex action, and in quantities of from .5 to .6 gramme per kilo of the body-weight, it causes convulsions and tetanic spasms. Apocodeine, therefore, is a nervine, acting primarily upon the brain. In large amounts, the convulsant actions of the drug manifest themselves secondarily, and in a rapid manner, surpassing all other actions in intensity. The convulsant effects come on rapidly, masking the cerebral action, especially when the drug is introduced into the system directly through the circulation. The actions of apocodeine upon the centres, under all circumstances, are not, however, very pronounced; they quickly disappear without the production of consecutive untoward effects. Under toxic doses, the animal dies in violent convulsions. All these results were obtained from experiments performed on the dog.

# THE ANTIPYRETIC ACTION OF GUAIACOL LOCALLY APPLIED.

An interesting contribution upon this subject is published by L. BARD (Lyon Médical, June 4, 1803). The author details four cases of tubercular disease in which the local application of guaiacol caused a marked reduction of the pyretic temperature. The results obtained in one of these cases deserve special attention. The patient experienced from the beginning of the treatment a marked amelioration, and not only did the drug keep the temperature down, but the appetite returned, and in a short time the patient, considering himself cured, left the hospital accordingly. The pure guaiacol being a liquid body, of slightly syrupy consistence, may be painted over the thigh or the back, covering the corresponding part with an impermeable towel. Dosage can thus be managed easily. The quantity employed at the beginning was 3 grammes, decreasing this amount at each treatment. Thus applied, the drug did not cause any irritation of the skin. According to the author, the antipyretic action of guaiacol, employed as described, is not confined to tuberculous cases. The medicament has given the same satisfactory results in other pyrexias, such as in that of erysipelas and pneumonia. The drug (with the exception of one of the tuberculous cases) never produced albumin in the urine. The albuminuria present in this case was not modified by the agent. On the whole, the therapeutic method described, as regards the local use of guaiacol to reduce febrile temperatures, is encouraging and worthy of further trial.

# THE USE OF PILOCARPINE IN THE TREATMENT OF DIPHTHERIA.

In the Australasian Medical Gazette for April, 1893, HIRSCHFELD reports his experience with pilocarpine in diphtheria. He generally acts as follows: A strong purgative is given in the first instance, calomel together with compound powder of jalap, while the pilocarpine mixture is prescribed at once. If the child is able to gargle, chlorate of potassium is chosen for the purpose; if not, attempts should be made to make it gargle with some boiled water,

to which some table salt may be added. If the patient is too young, it is not advisable to add the table salt, because he will be likely to reject the gargle on account of its taste. Externally a moist compress may be applied in the ordinary way,—a napkin dipped into cold water and wrung out, a piece of water-proof sheeting or gutta-percha paper, and that to be covered by a roll of flannel; the moist heat favors the resolution of the diphtheritic deposits.

With regard to diet, milk should form the principal food of the patient, which may be taken either pure or preferably mixed with equal parts of soda- or Spa-water; a teaspoonful up to a tablespoonful of brandy may be added to the milk. A raw egg swallowed whole sometimes eases the patient considerably. To counteract any depressing effect pilocarpine may have upon the heart, stimulants are strongly to be recommended; wine is, in the writer's opinion, preferable to whiskey or brandy given neat. There are several official preparations, which may be divided into two classes:

1. Such as are prepared from the original leaves of Pilocarpus pennatifolius, -- infusum, extractum, and tinctura jaborandi; 2, the salts of the pure alkaloid itself, pilocarpine, that represents the active principle contained in the plant. The preparations obtained from the jaborandi leaves cannot be recommended for therapeutical use, though to judge from their number contained in the Pharmacopœia they seem to have met with more favor than pilocarpine. In the first place, they are uncertain as to the quantity of the alkaloid contained in them; secondly, they contain, besides pilocarpine, another alkaloid, jaborine, which has an effect exactly the opposite to pilocarpine, and to which most of the unpleasant results observed under the exhibition of iaborandi leaves must be attributed. Merck first isolated from the leaves the alkaloid and its hydrochloric acid compound, the Pilocarpinum muriaticum of the German Pharmacopœia. The official English preparation is the nitric acid salt. Both compounds are white crystallizable powders that dissolve readily in water. The original formula advised by Guttmann for a child about five years of age was,—

> B: Pilocarpin. hydrochlor., gr. ss; Pepsin, gr. x; Acid. hydrochl., mii; Aquæ, q. s. ad 3xxii. Sig.—A teaspoonful every hour.

But in the majority of cases it is not necessary to administer as much pilocarpine as rec-

ommended above, though children bear the drug comparatively better than grown-up people. The individual susceptibility to the alkaloid varies to a very great extent, and it is far better to feel one's way by beginning with small doses, and only increasing them if they prove insufficient in attaining the result desired,—namely, perspiration and salivation. It will thus be possible to avoid in nearly all cases the ill effects reported by other authors who employed too large doses at the beginning. It is advisable to combine every dose of pilocarpine with some alcohol to counteract any depressing effect and to correct the taste with syrup of orange, which generally proves agreeable to the little patients. Thus, for a child six years old:

R Pilocarpin., gr. 1/3;
Spr. vin. gall., Ziv;
Syrup. aurant., Zi;
Aquæ, q. s. ad Ziii.
Sig.—One teaspoonful every two hours.

As a rule, this will be sufficient for the purpose; if not, it can readily be increased and taken every hour. The action of the medicine is generally very satisfactory. The physiological effects of the pilocarpine—sweating and salivation—begin to show themselves sooner or later, according to the individual susceptibility to the drug, generally within twelve hours. The temperature goes down as soon as perspiration has fairly set in, while the casting off of the false membrane often takes place in surprisingly quick time. It is not advisable to discontinue the pilocarpine at once, but break it off gradually.

The objection that may be raised against the use of any drug in diphtheria—namely, that it cures only slight cases that would have got better without any treatment—may also be raised against pilocarpine; but a case that a few months ago occurred in the writer's practice certainly points the other way. A child died of diphtheria in the Children's Hospital. A few days afterwards the mother of this child complained of sore throat, and the following day two other children of the same family were attacked with the same complaint, the mother having evidently been the medium conveying the infection from the first child to the other children. The inspection of the throat left no doubt as to the nature of the case. The treatment as described above was immediately instituted, with the result that the diphtheritic membrane had disappeared in every case within three days.

Various untoward results have been reported by various authors, but that is generally due to incautious use of the drug, more particularly to the administration of too great doses. Dr. Hirschfeld has seen unpleasant symptoms arise in only one case a few years ago in Germany.

During an epidemic of diphtheria that was raging at Frankfort a school-master brought the disease home from his school, and infected his wife and four or five children. Pilocarpine was prescribed for all of them, the same mixture, but the different patients had, of course, to take different quantities. By mistake the mother took four or five doses of exactly double the quantity she was ordered,—a tablespoonful instead of a dessertspoonful, when suddenly a strong anxiety overcame her. She began to vomit and looked very pale. The pulse was 120, but regular. All these symptoms disappeared so quickly when the pilocarpine was discontinued that the medicine could be resumed on the evening of the same day.

Contraindications against the use of the alkaloid of the jaborandi leaves are organic diseases or fatty degeneration of the heart. It is wise to watch the pulse closely, and note at once any undue acceleration which, together with the retching, usher in the pilocarpinepoisoning. If such should have taken place, it is necessary to stop its administration immediately. The alarming symptoms will disappear very quickly with the suspension of the drug. The author emphasizes the fact that no ill effects will be observed if the quantity of pilocarpine administered is kept within certain limits. The German Pharmacopæia allows as maximum dose for the adult 1/2 grain per single dose, and one grain per diem of the muriatic salt of the alkaloid. In severe pilocarpine-poisoning, atropine must be used as an antidote, but it is not probable the physician would push the drug to that extent.

#### STRYCHNINE IN SNAKE-BITE.

DR. T. E. SMITH, of Campbelltown, New South Wales, reports in the *Australasian Medical Gazette* for April, 1893, the following case in which strychnine proved useful in snakebite:

F. W., aged ten and a half years, was bitten on the dorsum of the left foot at 10 A.M. 8th of December last. He was then over a mile from his home, so his father immediately scarified the wound and applied a ligature below the knee.

The boy then started to walk home, and when about half way he got a violent pain in the stomach and commenced to vomit. He naged to walk the remainder of the way, and

on arrival he was given a glass of brandy and water, which he vomited at once.

The author was then called in, and when he got to the house was told "that the boy had just had convulsions, was vomiting blood, and they thought it was all over with him."

The patient was in a semi-comatose condition on the veranda, lying on his back.

He was extremely pale; skin cold and moist; respirations hurried; pupils widely dilated and with but little reaction to light; frequent vomiting mixed with blood; temperature, 95.8° F.; almost pulseless.

11 A.M.—15 minims liq. strychniæ (B. P.) was subcutaneously injected, and five minutes later the patient roused himself and said "he did not feel so sleepy," and his appearance began to improve.

11.30 A.M.—Still vomiting; blood increasing in quantity.

11.45 A.M.—Complained of headache, and felt sleepy again.

12 M.—Had a return of all the previous symptoms; temperature, 96° F.; pulse, 114; injected 12 minims liq. strychniæ (B. P.).

12.05 P.M.—Felt better, but vomiting continued.

12.30 P.M.—Had a second attack of convulsions.

1.45 P.M.—Greatly improved; vomiting ceased; sat up and took a drink; temperature, 99° F.; pulse, 124.

4.30 P.M.—Feels well; temperature normal; pulse, 116.

At 10 P.M. the patient had had two hours sleep and was going to have some solid food. The following day he was quite well and running about, and said he was none the worse of his snake-bite.

# THE NITRO-HYDROCHLORIC ACID BATH IN THE TREATMENT OF CHRONIC LIVER CASES.

Judging from the frequency with which uncured chronic liver cases come under observation,—cases which have undergone a long course of treatment, including, it may be, drinking and bathing in certain Continental waters or a sojourn at some sea-side resort, but in which the acid bath has formed no part,—Francis (Medical Press and Circular, June 7, 1893) is inclined to believe that, for some reason or other, this valuable remedy has fallen considerably into disuse. And yet for the cases in question,—for simple congestion, with or without enlargement (even sometimes for functional derangement only), for torpidity, where the

tapotement form of massage is likely to do so much good if it be sufficiently prolonged,—for such cases as these the nitro-hydrochloric acid bath, giving, as it generally does, such highly satisfactory results in a comparatively short space of time, should be among the earliest of the remedies employed. The local application of the fluid directly over the region of the liver, either in its entirety or only over that part where the organ is evidently affected, Francis advocates from both personal and general experience,—the local application in preference to the bath proper (in which there is of necessity a break of some hours' duration in the treatment), because the salutary effect is continuous and the cure consequently more speedy. In extreme cases both plans may be adopted. Instructions for making and applying the bath locally are given in Squire's edition of the British Pharmacopœia; but whereas, following Sir Ranald Martin, who introduced into English practice the remedy first substituted for mercury in hepatic disorders by Dr. Helenus Scott, of the Bombay army, it is there directed that the entire bandage encircling the abdomen shall be soaked in the acid, a fold of soft flannel (a piece of lint would do) so soaked and wrung out is quite sufficient. The full amount of bath prescribed in the Pharmacopœia-eight ounces of acid to a gallon of water-need not, of course, be used. The author usually puts a fourth of the quantity into two pint (twenty ounces in each) bottles of water; and, when required for application, warms the mixture contained in one of them in a jug of water hot enough to raise the temperature of the bath to over 90° F., and then, pouring the fluid into an internally-glazed earthenware vessel,—a large glazed pudding-basin will do, -uses it instantly. The oiled silk, cut to thoroughly cover the fold of flannel or lint, but no more, should fit close; and the bandage, whose width will depend upon the nature of the case, should be made to encircle the abdomen firmly, to avoid all risks of overflow and destruction of clothing, of which, however, there need be no fear if the fluid has been well wrung out. When done with, the fluid is poured back into the bottle, which, with the remainder of the various articles used, should be kept separately on a shelf, out of the easy reach of children and cats. The same bath may be used several times. The whole process is exceedingly simple and easily managed by an intelligent patient after the first or second application by the doctor.

In the milder cases recovery, as a rule, is

rapid, the local pain, the enlargement also, if any, and the various dyspeptic symptoms of which the disordered liver was the cause—e.g., the anorexia, the sense of fulness after eating, the flatulence, the characteristic lassitude and depression of spirits, etc.—speedily disappearing. In the more serious cases recovery will necessarily be slower. The writer states that he had recently such a case under his care in the person of a lady, sixty years of age, the widow of an Indian officer. It commenced with simple congestion, the result of a chill, followed by enlargement and jaundice, and accompanied by the usual dyspeptic symptoms. The patient had been under treatment for several weeks, but nothing seemed to do her any permanent good. An eminent physician had ordered her to Brighton, from whence she returned in a few days worse than ever. The practitioner at Brighton, whom she consulted, told her that the climate being then cold—it was April—was not suited for her case, and the sooner she left the better. After one week's treatment with the bath, locally applied, the lady showed symptoms of improvement, and within the month had perfectly recovered. She is now in excellent health.

On sensitive skins the surface is sometimes much reddened, a crop of pimples accompanying the application. In moderation this is of no consequence, though occasionally in such cases it may be necessary to intermit the treatment. The external results are no measure of the benefit to the organ. The action of the acid is not only that of a counter-irritant; indeed, that is its least recommendation. efficacy depends, it is assumed, upon its absorption and the consequent supply of oxygen to the blood, promoting thereby the formation of fibrin, the restoration of tissue, and, in combination with dilute nitro-hydrochloric acid by the mouth (with or without taraxacum), acting as a powerful tonic to the liver. The treatment is not suited for cases of advanced structural disease, though it may answer sometimes in simple incipient induration.

### ANIMAL EXTRACTS AS THERAPEUTIC AGENTS.

The Therapeutic Gazette has contained such complete abstracts of the articles upon the employment of animal extracts in the treatment of various diseases that its readers can rest assured that they are in touch with all the literature worth noting upon this topic. It will interest them, therefore, to read a summary of the present status of the employment of animal

extracts in therapeutics, which forms a leading article in the *British Medical Journal* for June 7, 1893.

It is now some years since Brown-Séquard announced the wonderful effects which followed the subcutaneous injection of testicular extracts, as exemplified in his own person; and though many jeered him as the discoverer of the secret of perpetual youth, the notion has steadily gained ground that there is, after all, something in it. Since, also, the success that has followed the injection of thyroid extract in myxcedema, we can hardly wonder that this belief has increased.

Physiologists have recently been making a number of observations, which show that many organs do more than what was formerly regarded as their functions. The experiments of Bradford on the kidney have shown that this organ does something else in addition to excreting urine; those of Minkowski and Von Mering on pancreatic diabetes, of Langlois and Abelous on the suprarenal capsules, and of Horsley and others on the thyroid, have led to the introduction of the expression "internal secretion." We think that this term is a rather unfortunately chosen one; but it, nevertheless, expresses that the organs in question have some action on the blood, and through it on the tissues generally, which influences their metabolic changes. Previous, however, to any of these experiments, it was a perfectly well recognized fact that removal of the essential organs of generation had a profound influence on the structure of the whole animal, and also on the mental tendencies of the individual.

But the precise modus operandi is in all these cases still a sealed book. The composition of the internal secretion, where it exists, is unknown. It is, however, presumed that an extract of the fresh organ must contain the active substance in the conglomeration of bodies which are extracted by glycerin, salt solutions, or whatever the solvent used may be. There can be little doubt that these substances are of a complex organic nature, substances which call on the resources of the organism to manufacture for itself. We can, therefore, hardly be surprised that if these substances are administered to a debilitated person unable to make them for himself, some amount of temporary stimulant effect is produced, and in one instance, at least,—that of myxœdema,—the curative result has justified the method used.

Fully granting this, we still feel compelled to doubt many of the other so-called cures. There is in all men a natural tendency to draw general conclusions from particular instances; to seize an idea and run it to death. In the causation of disease, at one time it is germs, at another ptomaines, at another toxalbumoses, that are invoked to solve every mystery and explain every difficulty. In the treatment of disease. at one time mineral drugs, at another chemical drugs produced in the laboratory, are fashionable; at one time protective inoculation, at another curative inoculation, is in the ascendant. All causes and all treatments have their proper places, but we may hope that we are not now to suffer an epidemic of universal injections. We hear of some injecting nerve extracts to cure neurasthenia and locomotor ataxy, heart extracts to cure heart-disease, pancreatic extracts to cure diabetes, testicular extracts to cure old age and many other evils, including even phthisis and cancer.

Manufacturing chemists are making extracts not only of thyroid, but of nearly every organ in the body, even including the pituitary body, this last for the cure of acromegaly. We find medical men writing of these ideas and of the cures achieved in the most sanguine strain, and often upon no better evidence than quacks produce for their "cures." These injections may be, and often are, extremely poisonous; for although Brown-Séquard states that he has observed a rise of temperature only twice in one hundred thousand injections, we must remember Woolridge's experiments; and we recollect, too, having heard of sloughing following injection of pancreas for diabetes. This last result is hardly surprising, for a pancreatic extract will contain not only the "internal secretion," but the external secretion also, and trypsin is a very powerful digestant, especially of tissues prone to disintegrate, like those of a diabetic.

Perhaps Massalongo has hit the right nail on the head in an article he entitles "A New Phase of Suggestive Therapeutics." He found that in healthy animals testicular fluid had no effect; that in cases of disease the modifications are slight and transitory, and due to psychical tension and excitement; that in organic disease the improvement is due to suggestion and the influence of the imagination; and that such curative effects are best marked in cases of hysteria and neurasthenia when there are expectations of relief, and that equally good results were here obtained by inert substances with equal facility.

One more quotation in conclusion. Professor Brown-Séquard says, "To our utter surprise, the disease that gave the greatest number of ameliorations is cancer superficially situated." We confess that we cannot share this surprise; the recent developments of Mat-

teism should have prepared Professor Brown-Séquard to guard against the fallacies into which he has unwittingly dropped.

### ICE IN THE TREATMENT OF ACUTE PNEUMONIA.

Within the last year we have published among the Original Articles and in the Progress columns of the GAZETTE a number of papers upon the employment of ice or cold as a therapeutic measure in other ways than by the Brandt treatment of typhoid fever. Particularly to be remembered are the papers of Drs. Jackson and Kinnear. In the *Medical News* for June 24, 1893, Mays contributes an article upon the subject. He has already written two papers upon it, and his final article is in the form of a collective report, in which he details some fifty cases. The conclusions which he reaches in the analysis of these cases are of interest.

1. The Resolving Power of Ice on the Exudation.—This is a marked feature in its therapeutic action, and must be regarded as one of the strongest factors in its curative influence. This can at least be partly explained on the following basis: The most apparent lesion in croupous pneumonia is an enormous distention of the pulmonary capillaries, with partial or complete stasis of the blood in these vessels, exudation of the fluid constituents of the blood, and diapedesis of white and red blood-cells into the alveoli of the lung. It is well known that cold has the power of contracting the blood-vessels, and from this action one can understand why it should exert a beneficial action in pneumonia, by giving tone to the capillaries, by restoring the normal blood-flow, and thus checking the leakage. But there is often reason for believing that it also dissolves the exudate in the pulmonary alveoli. For example, there may be a pneumonic area in which there is absence of respiratory murmur, with the presence of a flat percussion-note and bronchial breathing, indicating, beyond doubt, that the process has passed beyond the stage of engorgement and into that in which the exudation has taken place into the alveoli; yet the application of ice will, in a remarkably short time, develop a new group of physical signs, such as crepitation, reappearance of the respiratory murmur, diminution of flatness, etc., indi-, cating that a break-down occurred in the exu-This has not only been observed by Mays, but is dwelt on by Dr. Lees, who says, "In many cases I noticed a striking arrest in the development of the physical signs," and that the ice-bag "distinctly tends to repress the inflammatory process in the lung."

Influence on Symptoms.—No less decided is the influence of the ice on some of the most prominent symptoms of pneumonia. The pain, difficult respiration, cough, and expectoration are remarkably relieved, and the temperature is frequently depressed two or three degrees in the course of half a day. The beneficial influence exerted on these symptoms produces a very agreeable effect, and often makes the ice acceptable to those who at first protest against its use. This Mays noticed in most of his cases, and it has been noticed by others.

Is the Ice Injurious?—Mays's rather limited experience with the ice treatment does not show that it is accompanied or followed by any evil consequences, nor have any of those who have reported cases to Mays observed any such results, although some of them kept the ice applied for two weeks. Dr. Lees says, further, "I have never seen any harm follow from the employment of the ice-bag in pneumonia."

Ages of Patients.—It is important to note in this collection that the ages of the patients in whose cases the ice was applied varied from infancy to old age, the youngest being six and a half months old, and the three oldest sixty, sixty-five, and seventy-four years respectively.

The Results.—It may be said, without claiming too much, that the results obtained from the ice treatment of pneumonia have been good. Out of the fifty cases which the author has collected, but two were fatal, making a death-rate of four per cent. In estimating this mortalityrate it must be remembered that at least one of the cases that died was an exceedingly unpromising one, being a sufferer from chronic leadpoisoning and also very intemperate; while the pneumonia which caused the death of the other one was in all probability an acute exacerbation of an old attack. In Dr. Lees's series of eighteen cases no death occurred, nor did any occur in the eleven cases reported by Dr. Jack-Moreover, the Lancet of August 10, 1892 (p. 279), refers to an article by Dr. Fieandt, published in Duodecim, a Finnish medical journal, in which there is an account of one hundred and six cases of pneumonia treated with ice applications by that gentleman, and notwithstanding that among these there were ten cases of double pneumonia, and that the epidemic of the disease was rather severe, he had only three deaths, or a death-rate of 2.82 per cent. Adding these cases to those reported in Mays's collection, we have a total of one hundred and fifty-six cases of pneumonia treated by means of cold applications to the chest, with five deaths, or a death-rate of 3.20 per cent.

While the number of cases reported here is not very large, it is nevertheless evident that the results of the ice treatment are much superior to any other in the author's estimation. Thus, according to Osler, the mortality-rate of one thousand and twelve cases in the Montreal General Hospital was twenty per cent., while in the Charity Hospital at New Orleans it was 20.01 per cent. Of one thousand cases of pneumonia treated in the Massachusetts General Hospital from 1822 to 1889, the mortality was twenty-five per cent. In Dr. Hartshorne's valuable paper on "Pneumonia" it is estimated that the death-rate from this disease in the Pennsylvania Hospital during the years 1884, 1885, and 1886 was a little more than thirty-one per cent. In comparing the results of the ice treatment, so far as they go, with those which have been obtained from the treatment pursued in the hospitals named, we find that the former are about eight times better than the latter. It will be of great interest to see by future clinical investigation whether these satisfactory results can be maintained, and if this can be done even approximately, it is needless to say that a pronounced advance in the therapeutics of acute pneumonia has been made.

### THE HYPODERMIC INJECTIONS OF PHOS-PHATE OF SODIUM.

In reviewing the literature of the subject, Ed. Égasse (Bull. Génér. de Thérapeutique, March 30, 1893) calls attention to the recent researches of Crocq, fils, who draws the following conclusions: 1. The subcutaneous injections of a two-per-cent. solution of sodium phosphate in laurel-water produce no local or general deleterious reaction. 2. With a daily injection at the start, and afterwards an injection every other day, of I cubic centimetre at first and then of 3 cubic centimetres of the solution referred to, a powerful influence is exercised in patients suffering from nervous disor-3. This measure produces a purely tonic action on the nervous system, and the results are either curative or palliative,—curative, in diseases not dependent on a functional disturbance of the cerebro-spinal axis; palliative, when there exist lesions of the nerve-4. The superiority of this method centres. lies chiefly in the simplicity of its employment.

Van Bever and De Smedt, however, as the result of a fair trial of the method, have not been able to corroborate Crocq's conclusions. These authors treated fifteen patients,—four

hysterical women, four neurasthenic men, two females with rebellious trigeminal neuralgia of the left side, one case of chloranæmia, two of paralysis agitans, and two of tabes. In all, they administered four hundred injections. In twelve of the cases the results were negative; in two of the neurasthenic men an amelioration was noticed during the first fifteen days, and only a female suffering from trigeminal neuralgia is said to have been completely cured.

Following the suggestions of Peter, Chéron has employed injections of phosphate of sodium to increase vascular tension, using the following solution:

Pure phenic acid, 1 gramme; Chloride of sodium, 2 grammes; Phosphate of sodium, 8 grammes; Distilled water, 100 grammes.

The injections were made with aseptic instruments, and varied from 5 to 100 grammes, introduced in the trochanteric region. Under the influence of these injections there was noticed a diminution of pain in certain diseases, such as pyosalpingitis, and they also enhanced the reabsorption of pelvic exudates. An injection of this artificial serum, in doses of 5, 10, and 20 grammes at a time, produced an elevation of the arterial tension. In cases of pelvic peritonitis, acute or chronic, an injection of from 5 to 10 grammes of the liquid caused an increase of two to three centimetres, which persisted for fully twenty-four hours. Chéron, therefore, recommends at the beginning of the treatment injections of 5 to 10 grammes, repeated several times a day in the acute cases, and once every day, every other day, or every three days in the chronic cases. If said amount does not modify the arterial pressure, it must be increased to 20, 40, and 60 grammes in order to obtain permanent results. This hypertension, kept up for several weeks, gives rise to a rapid reabsorption of the exudates, followed by a notable amelioration of the digestive functions. Chéron concludes, then, that the hypodermic injections of this artificial serum constitute an exceedingly important therapeutic measure in the medical treatment of pelvic inflammations of the female. They improve the general condition of the patient, and possess a marked resolvent power on all pelvic exudates.

### THE PROPHYLACTIC TREATMENT OF . SCARLET FEVER.

In the *Medical Magazine* for May, 1893, Jamieson states that the best and most efficient method of limiting the spread of scarlet fever is

a subject which has occupied much attention for many years, and gives the four points which he believes require consideration, as follows:

- 1. The course of the infectious principle of scarlet fever.
- 2. The treatment of the throat and mucous membranes.
  - 3. The management of the skin.
- 4. The value of "so-called" complete isolation alone, as compared with antiseptic measures and restricted isolation.

I. The Course of the Infectious Principle of Scarlet Fever.—To understand the grounds on which antisensis in scarlet fever, to be successful, must be carried out, it is necessary shortly to recapitulate some items of our knowledge of the march of the disease. In the first place, there are only three routes by which the scarlatinal poison can enter the system. These are: (a) By being directly inoculated. This, though experimentally proved, happens comparatively rarely in practice, the most prominent examples being some instances of puerperal and of surgical fever. Such are, however, beyond the scope of the present paper. (b) By being swallowed. This is a more common source, and the medium is frequently milk, a fluid in which the virus, though introduced in extremely minute quantity, appears to grow and multiply readily and rapidly. (r) By inhalation, by far the most common method of transmission. It is possible that this may occur from close contact with the patient in the early stages of the disease; incomparably oftener by breathing in the desquamating flakes of epidermis so freely shed from the body. Since these retain their activity for an indefinite period if kept dry, they are the vehicle by which the complaint is perpetuated and fresh outbreaks are set up.

There is abundant evidence to prove that incubation is very short, provided the virus has obtained access to the blood; delay in the manifestations may occur in some cases from its lying dormant for a period in the crypts of the Probably in all cases the first symptonsils. toms are manifested in the throat; the second, usually within twenty-four hours, as the eruption on the skin. It is more than likely, indeed seems almost certain, that during the period of pyrexia the virus is multiplying in the blood and is in process of being conveyed to the under surface of the integument. Deposited beneath the epidermis, it rises through its layers, and is finally cast off in flakes of exfoliating cuticle, which, poisoned by its presence, are thrown off in excessive amount. The secretions in post-nasal catarrh, in middle-ear disease, or the urine in post-scarlatinal nephritis, have not yet been proved to be infectious.

In what form this virus exists in the epidermic flakes is certainly not quite determined, but it seems to be a non-volatile, particulate body, most probably an organism, very possibly one of those described by Edington in a joint research. When exfoliated, it is ripe for reproduction so soon as it finds a favorable soil.

Desquamation may begin before the rash has faded, nay, even while it is still fully out. The author has seen it commence quite distinctly on the fourth day, or it may, in rare instances, generally in cases where some complication has arisen, first appear as late as the sixteenth. However, the day on which it manifests itself is, in the majority of instances, the ninth, tenth, or eleventh. The process of "peeling" is not completed, if uninterfered with, till, on the average, the end of the eighth week, often longer. The soles are the last parts to free themselves of their epidermic covering.

The disease has been understood, so far as he has gone, to have run a natural, undisturbed course. Little mention has been made of complications or sequelæ. Some of these are probably to be ascribed to organisms associated with that to the presence of which the disease itself Thus, they may be brought about by ordinary pyogenic organisms. Among those induced by associated organisms may possibly be rheumatism, one of the earliest of the complications; while nephritis, like rheumatism, is more frequent in some epidemics and in certain families than in others. The only invariable symptom is desquamation; any one of the other symptoms may be indistinct or even absent, but this, in the writer's experience, extending now to many thousands of cases, is never absent in any genuine instance of scarlet

He therefore enters a most strenuous protest against the doctrine taught by Mr. Curgenven. He argues that if antiseptic inunction be commenced on the first or second day, the full development of the disease is prevented, no sequelæ occur, and it terminates as a simple case of the fever. He further states that if the infective germs have been destroyed by antiseptic inunction, then the patient is no longer infectious, he may be considered well, and after about the tenth day, free to mix with others. So far from this being so, no more dangerous enunciation could be made in the interests alike of the public or of the patient. believe that any inunction whatever, however powerful, employed only at a time prior to that at which desquamation ordinarily begins, can finally disinfect the patient, seems incredible. But, besides, to set him free at that period is to expose him to the risk of nearly every complication. Were a case of scarlet fever, however slight, to be willingly permitted to go about in ten days from the onset of the ailment, nay, in four times ten days, the medical officer of health would be justified in interfering to prevent him.

Some weeks since the administration of the biniodide of mercury was said to check the progress of the disease, to obviate desquamation, and to free from the chance of all sequelæ or complications. This has been most carefully tried in a series of cases in the City Hospital, and not only did desquamation occur, but in some it was remarkably profuse; all the ordinary complications happened as usual. It was observed in the case of two brothers occupying the same ward, that the one who took the biniodide suffered more severely from nephritis than did his brother, who had none. The case for inunction as a curative measure in scarlet fever is not one whit stronger than that for the biniodide.

Again, scarlet fever in isolated cases, when suspicion is not aroused, is rarely indeed diagnosed, even by the most experienced, on the first day, often but hesitatingly on the second by many able practitioners; so that were inunction capable of doing what is claimed for it, its virtues would but seldom be put to the proof.

2. The Treatment of the Throat and Mucous Membranes.—The tongue, though often fiery red when the white pellicle has cleaned off from before backward, seldom gives trouble, but the throat and fauces need careful watching, for it is only by early attention that we can hope to ward off those secondary accidents of inflammation of the middle ear and of the adjoining lymphatic glands in the neck, which lead to such disastrous consequences. As a rule, the very best application to the throat is a spray of peroxide of hydrogen, using the 10-volume This, when applied, causes frothstrength. ing as a result of oxidation, an intensification of any pre-existing white patches or deposits of exudation on the tonsils or fauces, and the revelation of many new ones previously invisible. It occasions a sensation of slight, sometimes rather sharp, pain, lasting from a few seconds to half a minute, immediately succeeded by a distinct feeling of comfort. The spray can be repeated from three times a day to once in two hours, according to the mildness or severity of the case. It should be continued, the intervals being extended as improvement progresses, till all redness and swelling other than normal to

the patient have disappeared and till its application no longer induces pain. Less efficient, but useful where, from any reason, the peroxide cannot be used, is painting with a saturated solution of boric acid or of boroglyceride in glycerin, to which from ten to fifteen grains in the ounce of hydrochlorate of cocaine can be added if pain or uneasiness in the throat be complained of. In some cases, chiefly those complicated with diphtheria, a tent-bed and the use of a steam-kettle affords great relief, however, and appears to be distinctly curative. It is the steam, and not any antiseptic inhaled with it, which does good here.

The troublesome naso-pharyngeal catarrh, accompanied with copious, often fetid, muco-purulent discharge, seldom seen except in children, needs syringing with a warm solution of common salt, two drachms to the pint of water, with half a drachm of boric acid. This is repeated twice, or more frequently, in the day; the nostrils are then carefully dried with a pledget of absorbent cotton-wool, and a little cold cream, to which two per cent. of salicylic acid has been added, is gently smeared inside each nostril.

3. The Management of the Skin.—Important for the patient as the careful guidance of the throat-symptoms may be, the care of the skin is of much more consequence as regards the communication of the disease. We have seen that the virus exists in the desquamated flakes in a state ready to impart the complaint to those predisposed to its reception. It is all-essential, therefore, to anticipate this, and, so far as possible, to render these particles innocuous. It is fortunate that, with a little care, this can to a large extent be accomplished.

In the stage of exanthem we favor the development of the rash by warm baths, which at once determine the eruption to the skin and soothe the integument by moistening its congested These baths are best given at night, surface. and have a peculiarly calmative effect. In the case of adults they may have in many instances to be replaced by tepid sponging. After the bath at night the entire surface must be smeared with some oleaginous substance containing an antiseptic. At one time the author employed carbolic acid and thymol ointment, partly made up with lanolin, but this takes time to apply and is sticky, so latterly he has used almond or olive oil containing carbolic acid and oil of eucalyptus globulus, which last he had recourse to before Mr. Curgenven had published his papers on its applicability. It is unnecessary to prepare a strong solution. One drachm of carbolic acid and two to four of eucalyptus

globulus oil in eight ounces of almond or olive oil is sufficient for all purposes, if well rubbed in night and morning. No symptoms pointing to carbolic acid absorption have shown themselves since this combination has been adopted, as did occasionally occur when a carbolic acid ointment was used.

As it is highly important that desquamation should be completed in as short a period as possible, so soon as distinct evidence of peeling manifests itself, the simple warm bath or tepid sponging must be supplemented by the addition of a soap which will aid epidermic exfoliation. The one most suitable, and which fulfils all indications without the least injury to the patient, is one invented by Dr. Eichhoff, of Elberfeld. It is a superfatted hard soap, containing three per cent. of resorcin and three per cent. of salicylic acid, and is made by Mielck, of Hamburg, and by Muhlens, of Cologne. The mode in which the soap is best used is as follows: Some of the soap is rubbed on to a piece of wet flannel, and this is then used to wash the entire body, the scalp excepted, unless the head has been shaved. It is sufficient that the body be washed once daily, but the palms and soles can be washed twice; the inunction with the medicated antiseptic oil is continued twice a day, as before, the scalp being now specially attended to, as not being washed. Under this treatment desquamation is completed in all cases in less than six weeks, often in five, instead of lasting at least eight. We can limit infection by mild but constant antiseptic inunctions in the later stages when desquamation is proceeding, and can favor desquamation by the employment of a soap which hastens it, the same inunction being persevered The patient must be kept in bed for the first three weeks in all cases; longer if complications arise. He should not be allowed to mix with others, unprotected by having passed through the disease themselves, till desquamation is completed and until the scalp, if the hair has not been removed, has been well washed several When these precautions have been followed there is no further risk.

4. The Value of "so-called" Complete Isolation alone, as compared with Antiseptic Measures and Restricted Isolation.—One of the first demands made when a case of scarlet fever occurs is to isolate the patient. This is simply impossible in private, and in hospitals cannot be thoroughly carried out. In private, one cannot prevent some degree of communication between the nurse or person in attendance on the patient and those occupying the same house, and in this way infection may certainly be con-

veyed during the desquamative stage. In hospital, from the numbers crowded together at all stages of the disease, it is simply out of the question to insure, by any available means, absolute disinfection. No doubt all that can be done is done, but it is necessarily imperfect. Thus, isolation alone and *per se* cannot satisfactorily prevent infection.

But all this is changed if the antiseptic precautions and the mode of treatment just described are faithfully attended to and carried out. The activity of the virus is diminished, the scales are removed by washing as they become loose, nay, more, their separation is promoted, and they are cast off in a feebly-infective or non-infective condition. Of course no precaution found to be useful should be omitted. A wet sheet dipped in carbolic solution should be hung before the door of the sick-room. The nurse ought to wear a cotton wrapper or overall, which can be laid aside when she leaves the apartment, and all bed- and body-linen should be immersed in carbolic solution before being taken from the room.

As to the results of this method it is unnecessary to quote statistics, for only in one case in an experience of many years has the complaint spread. In this case it was subjected to the severest test possible. The younger sister of a girl so treated was permitted to associate in the closest manner with her sister all through her illness. She rolled on her bed and played constantly with her. In the fourth week of her sister's illness she contracted it, and had a sharp attack, though making a perfect recovery. The scales shed from the head were the probable medium of communication, as, through fear of cold, the hair being long, the head of the elder, though anointed, was not washed. Were it worth while, numerous examples of the converse, where quite remarkable protection was afforded, could be cited, but a little unbiassed consideration will convince the most sceptical.

### THE PHYSIOLOGICAL TREATMENT OF DISEASES OF THE HEART.

Germain Sée's work on the "Physiological Therapeutics of the Heart" is reviewed by RENAUT (Bull. Générale de Thérapeutique, April 30, 1893). According to this writer, Sée considers cardiac medicaments chiefly as regulators of the heart, and they are the iodides, the remedies comprised in the digitalis group, and caffeine. I. The iodides of potassium, sodium, strontium, and calcium form a group possessing vaso-dilator properties, exercising a marked systolic action, and influencing, be-

sides, the respiratory function. 2. The second class of remedial agents, taking digitalis as the type, act efficiently (independently of their diuretic action) on myocardiac elasticity, and produce dilatation of the left ventricle, the organ thus receiving and giving out a larger amount of blood. This class of substances comprises, besides digitalis, other more or less similar drugs, such as oleandrine, helleborine, strophanthine, sparteine, convallamarine, and adonidine. 3. Caffeine and theobromine are especially serviceable in regulating the action of the kidneys, and of which milk-sugar or lactose may be regarded as a succedaneum.

If to these three groups be added the one formed by the agents that regulate the respiration, such as the iodides and morphine, it may be said that we have gone over the cycle of remedies useful in the treatment of cardiopathies. All others may be regarded, according to Sée, as auxiliary, accessory, secondary, or pseudo-cardiac medication. Again, in the exact sense of the term, there is no such thing as a cardiac tonic. Referring to the iodides, it is held by the same authority that such remedies are not alone efficient in the treatment of syphilis and scrofula, and attention is called to: 1, their antidyspnœic and antiasthmatic action; 2, their cardiac influence; and, 3, their vascular and vaso-motor properties. Sée insists that these latter agents are indicated in the treatment of diseases of the heart to combat the following conditions: 1. During the compensatory period, marked by dyspnœa, when there is a lack of tone of the respiratory function. 2. In arteriosclerosis, especially of the coronary artery, characterized by angina pectoris, in which cases the iodide acts simply as a regulator of the cardiac and peripheral circulation. 3. In aortic aneurism; in these instances the iodide exercises a special influence on the aneurismatic artery. Finally, Sée concedes to the iodides a regenerating action upon the leucocytes, upon both the lymph- and blood-corpuscles.

#### IRRIGATIONS.

Apropos of the article in the Therapeutic Gazette of this July and August upon the value of enteroclysis in the treatment of summer diarrhoea in infants, the following article by Dr. Baruch, published in the Journal of Balneology for June, is of interest:

It is an almost universal fallacy to assume that hydrotherapy concerns itself only with the application of water to the cutaneous surface, and that all its results are attributable to the

improved condition of the nerve-centres which follows this peripheral stimulation. The etymology of the word indicates plainly that healing by water is its object; hence the application of pure water in any form, from ice to vapor, and in any manner, external or internal, comes under its purview.

A recent intelligently-written paper by DR. DAGGET, in the Buffalo Medical and Surgical Journal, refers to a valuable but much-neglected use of water. Irrigation of the urethra and bladder by posture and continuous current of hot water is presented as a means of curing urethral diseases, whose management has hitherto been a reproach to the profession. The fact that numberless and diverse formulæ for use in this malady burden our text-books and encumber our journals indicates that the profession is at sea, that our methods are uncertain, and that our treatment is empirical. The author justly condemns the crude mechanical methods which surgery has devised for the treatment of these common ailments, and especially condemns the too common practice of surgical interference during the existence of acute urethritis and its sequelæ. He advises as a good substitute for all other treatment the irrigation of the deep urethra with water sufficiently hot to cause smarting of the skin (how much more explicitly the requisite temperature could be expressed in degrees Fahrenheit!). Water of this temperature is borne with a feeling of relief and comfort. If the disease is confined to the anterior portion of the urethra, irrigation is to be executed in the upright position; if it involves the posterior portion, or deep urethra or bladder, irrigation should include these. For the latter purpose he has devised a position in which the patient's legs form a right angle with the thighs, and the latter form an acute angle with the body, which reclines upon a table,—upon the principle that nature's method of relaxing the parts involved is indicated by the squat and hump of animals in the act of evacuation. steady in- and outflowing current of hot water, with the patient in this position, is a far more valuable measure in the treatment of stubborn cases of urethritis than the ordinary deep injection, which the author compares to treating laryngitis by rinsing the mouth.

Mechanical cleansing is now acknowledged as far superior, for purposes of asepsis and antisepsis, to the best chemical agents. Just as in periuterine congestions and inflammatory conditions the steady irrigation with hot water constringes the vessels and aids absorption of pathological products, so must a continuous irrigation of the bladder and urethra, properly ad-

ministered, produce a similar detergent effect upon parts which a brief injection with some strong medicament fails to affect. When we consider, for instance, the measure recommended by Guyon and others for treating chronic cystitis,—viz., the injection guttatim of a strong solution of nitrate of silver, which is expected to be more or less diluted by the urine present in the bladder, we must grant that this is an exceedingly irrational procedure when compared with the thorough cleansing of the inflamed surface by hot water.

We have the same effect from intestinal irrigation in subacute and chronic diarrhoeas and dysenteries, which resist other treatment, but yield readily to thorough cleansing of the tract by plain water, made less irritating by being rendered slightly saline. The application of water in the cavities of the body presents an unlimited field, which it shall be our aim to cultivate and develop.

### IS THE BATH TREATMENT OF INFEC-TIOUS DISEASES IN ACCORD WITH MODERN IDEAS?

In a leading article by SIMON BARUCH, in the June number of the Journal of Balneology, this question is considered. He thinks, very properly, that the acceptance of any method of treatment by the medical profession should be predicated upon its response to the accepted ideas of the day. That the hydriatic measures now in vogue among well-informed clinicians do meet the indications which are regarded to-day as demanding fulfilment, more fully than any other method, may be asserted without fear of contradiction.

In all infectious diseases the *materies morbi* has a definite mode of action,—an action, however, which is not always alike in all cases, and differs chiefly with the type of the disease in each individual.

Taking a severe case as an illustration, we find the system overwhelmed by the toxines due to the biochemic activity resulting from the life and death of the micro-organism to which the disease is traceable. Be that as it may, we do know clinically that we stand in the presence of an intense toxemia which exercises a depressing, a devitalizing influence upon the nervous system. The latter is manifested by the depreciated condition of all the functions. The patient lies in a semi-stupor, his face is expressionless, the eyes dull and glassy, lids half closed (typhoid countenance). His perceptions are blunted, he mutters incoherently, picks at the bedclothes or into the air, he has no con-

trol over his sphincters. In brief, there exists great cerebral depression.

The pulse is rapid, feeble, dicrotic,—all manifestations of cardiac enfeeblement.

The respiration is shallow and ineffective; hypostatic conditions, bronchial congestions, and pneumonia result.

The temperature is elevated, either because of the loss of regulatory influence of the heat-centres or by diminution of heat-radiation from the skin, or both.

The secretions are diminished; the urine, for example, is concentrated, highly acid, and loaded with products of active tissue-change. These, together with the shallow respiration, are evidences of the crippled conditions of the emunctories, whose integrity is vitally important for the maintenance of health.

How does a hydriatic procedure adapted to the case remove these patent conditions which imperil life?

The patient is placed in a bath of 65° F.; frictions are used; his face and head are bathed in water at 50° F. The first effect is a refreshment, an enlivenment of the cerebrum. The eyes are opened, the face loses its apathetic stare; consciousness returns after one or more baths; the inspiration is deepened; expectoration is facilitated; the widening of the peripheral vessels and the stimulation of their coats relieve the heart; blood-pressure is increased, and the laboring organ becomes as quiet as does a sea-tossed ship in the hands of a skilled mariner.

Whether the temperature is reduced or not, the restoration, partial or complete, of the nerve-centres gives an impetus to the more efficient action of the organs depending upon it for innervation. These are palpable results.

Even the exacting demands of the most recent ideas are met by this treatment. Metschnikoff has shown by his interesting studies that our ideas on inflammation must submit to a revolution. Inflammation, he says, is no longer to be regarded as simply a condition of impaired cell-activity due to some irritation, but it is the "phagocytic reaction of the organism to an irritant." Cells are phagocytes, hungry to devour any toxine or microbe that may find entrance into the blood. We may successfully aid the system in this "reaction against toxines" by endowing its main vitalizing agent, the nervecentres, with vigor, by furthering elimination from the skin and kidneys, by removing hyperæmia of the organs and facilitating the passage of phagocytes into the tissues; but more especially by rendering the blood more alkaline, and thus more favorable to the phagocytes.

All these are accomplished, according to wellestablished experiments, by the cold-bath treatment

### THE ACTION OF BICHLORIDE OF MER-CURY ON THE BLOOD-CORPUSCLES.

The action of the bichloride of mercury upon the corpuscular elements of the blood has been the subject of an elaborate study by E. MAUREL (Bull. Génér. de Thérapeutique, March 15, 1893). The author has examined the question from toxicological, therapeutic, and pathological points of view. In the first instance he finds that,—

- 1. Bichloride of mercury, in high toxic amounts, exercises a noxious action on both the white and red corpuscles of the blood.
- 2. The drug in small amounts affects the white cells more markedly than it does the red bodies.
- 3. Finally, the minimum fatal quantities for the organism correspond to the smallest amounts necessary to destroy the leucocytes; the same relation exists in regard to the largest quantities tolerated by the economy and those which are borne by the leucocytes; and it can be said, therefore, that at present there is no histological element so susceptible to the influence of the drug in question as human leucocytes.

The results of previous studies lead the author to believe that the action of corrosive sublimate plays a more or less important *rôle* in poisoning by this agent.

Therapeutically, the observer has studied the action of mercuric chloride as an alterative and as an antiseptic. As an alterative (a) the drug, even in therapeutic amounts, exercises a certain action on the white blood-corpuscles. (b) When the substance is given by the stomach, this action manifests itself upon the leucocytes alone; but, on the contrary, when administered hypodermically and in the usual doses, the drug acts on both the white and the red corpuscles. These effects, in either case, may be explained largely by the alterative action of the agent. As an antiseptic, (c) the use of the bichloride of mercury, as such, is justified by its effects on certain pathogenic microbes. (d) This antiseptic action varies according to the nature of the germs; the mercuric salt is efficacious against staphylococcus albus only in the strength of 1 to 5000, while in the bacteria of carbuncle it acts well in solutions of the strength of 1 in 80,000. (e) Administered internally, the susceptibility of the white cells must be taken in consideration, and in such instances the drug should be employed against microbes that are more easily affected than human leucocytes.

These latter, in man, begin to be acted upon by solutions of the strength of r in 60,000, the effects being quite pronounced under the action of solutions of the strength of 1 in 40,000. In man, the microbicidal properties of the bichloride of mercury, given internally, are to be utilized only when the pathogenic germs can be acted upon by weaker solutions than the ones just indicated. (f) It is probable that the leucocytes of different animals are differently acted upon by the drug. In order to employ the agent as an antiseptic in a certain species of animal, it must be ascertained first the degree of susceptibility of its leucocytes. (g) It must be borne in mind that to act as an antiseptic it is not necessary that the dose of the drug employed be able to kill the microbe; it is sufficient that such a dose enable the leucocytes to triumph over the germs in question. Often the same amount of the mercuric salt diminishes the power of both kinds of bodies; but it is important that the action exercised be such as to enable the leucocytes to conquer, as it were, the microbes. In the majority of cases antiseptics, internally administered, act only as adjuvants. (h) When hypodermic injections are used, the cells coming in direct contact with the solution are destroyed; but this action is merely local, and the organism is soon able to repair the loss. (i) The external use of the drug is attended with less danger, since the bloodcells are not acted upon until after the mercuric agent has been mixed up with the liquids of other tissues.

Pathologically, the action of the bichloride of mercury upon the corpuscular elements explains: 1. The depressant effects of the medicament upon the economy, effects which are followed by a condition of general anæmia. In some cases the drug acts more powerfully upon the leucocytes than upon certain microbes, the reverse taking place, as has been shown, in other instances. The appearance of mercurial stomatitis can thus be explained. Again, in a third class of instances, the phenomenon may be explained by the fact that certain germs remain inactive while the corpuscular elements of the blood retain their normal powers; but as soon as such powers begin to fail, under this or that deleterious influence, then the latent germs are apt to become virulent.

Such in general are the conclusions drawn by the author from his remarkable study, and the results as a whole may be embodied in this statement: The leucocytes play an important part regarding the action of the bichloride of mercury, first as a toxic agent, second as an antiseptic, and third as an alterative.

# THE ABANDONMENT OF IRIDECTOMY IN THE EXTRACTION OF HARD CATARACT.

This is the title of an address delivered by T. PRIDGIN TEALE before the Ophthalmological Society of the United Kingdom on June 9, 1893 (*Lancet*, June 17, 1893). He describes in detail his method of extracting a cataract through a shallow flap, as follows:

- r. Antiseptics.—Carbolic acid still maintains its supremacy in his surgical work. The eyelids, eyelashes, conjunctiva, and conjunctival recesses are well cleansed with a solution of three minims to the ounce, a little more than one-half per cent., in which also all instruments, except the knife, are soaked.
- 2. Anasthesia.—Cocaine is employed exclusively. For this purpose the drops to be used are specially prepared just before the operation. A small tube containing a grain of sterilized cocaine receives ten minims of distilled water, and this is instilled into the eye once or twice.
- 3. The Lid-holder.—This is a spring speculum of a pattern which was brought to him from the Continent about twenty years ago. It is large, strong, and well curved, and yet it allows ample room for the finger and thumb of an assistant to hold it firmly, and by means of it to control the eyelids and defend the globe from injurious pressure or spasm of the orbicularis. The spring speculum having been introduced, is put in charge of a competent assistant.
- 4. Fixation of the Eyeball.—The surgeon, by means of conjunctival forceps with broad teeth, takes hold boldly of the conjunctiva and subconjunctival tissue about three millimetres below the cornea, rolls the eye downward, and commences the incision.
- 5. The Knife.—His earlier shallow flap operations were made with the narrow Graefe's knife. This, in his hands, was not quite satisfactory, as he could not easily retain the aqueous humor up to the moment at which the knifeedge reached the posterior surface of the cornea, and so sometimes the iris was washed over the edge and wounded. He therefore fell back upon the long, narrow knife of Sichel, which, by its wedge shape, retains the aqueous up to the moment at which its edge is turned forward against the cornea. For the last three or four years he has used a still narrower form of Sichel's knife, suggested by and made for Mr. R. N. Hartley. This has proved to be admirable for the purpose, combining the wedge principle of Sichel with a close approximation to the narrow Graefe.
  - 6. The Mode of Incision.—The point of the

knife enters the cornea just within the outer margin at its equator, and emerges at a counterpuncture just within the inner margin of the cornea at a level about two millimetres above the equator. As soon as the counter-puncture is well accomplished, and the point of the cataract-knife has passed out of the cornea to the extent of about four millimetres, the next step is taken. This is the most critical part of the operation. The knife is somewhat rapidly and with a sort of knack turned directly forward, so that the blade, which, up to this point, has been parallel with the iris, comes to a right angle with the back of the cornea. The section is completed by cutting directly forward, this final cutting being vertically through the corneal thickness, absolutely linear, and in position about midway between the horizontal equator and the upper margin of the cornea. The knack of this part of the operation consists in so managing the knife that, as soon as it is turned from a plane parallel with the iris, in which by its wedge shape it retains the aqueous humor, to a plane vertical to the back of the cornea, which at once allows the aqueous to escape, the edge of the knife shall rapidly reach the posterior surface of the cornea and be in contact with it before the iris can fold over its edge. While this final part of the incision is being made, an assistant controls the eyelids by the speculum, holding them slightly off the eyeball so as to avert any sudden pressure on the globe during the completion of the incision. The incision thus made is practically a shallow flap, chiefly linear, with a small limb at an obtuse angle corresponding to the heel of the knife at the outer edge of the cornea, and a still smaller, hardly perceptible, limb corresponding to the point of the knife at the inner edge of the cornea. At the limbs the knife passes through the cornea obliquely, but in the horizontal linear part it cuts vertically through the corneal structure.

- 7. The Section.—He always makes the section in the upper half of the cornea, using the right hand for the right eye and the left hand for the left.
- 8. Extraction of the Cataract.—The operation is completed as follows: While the assistant continues to control the eyelids by the speculum, the operator, still keeping a grip of the conjunctiva below the cornea, so presses the holding forceps against the eyeball as to steady the lens towards the cornea while he ruptures the capsule with the cystotome. By this manœuvre he avoids the risk of damage to the suspensory ligament by pressure of the cystotome. After the rupture of the anterior cap-

sule the delivery of the lens is effected by the mutual manipulations of the two hands, the one maintaining the conjunctival hold with the forceps below, while the other exercises pressure above the cornea by the convex surface of the curette. By this means, and more especially by the pressure of the curette just above the cornea, the upper edge of the cataractous lens is made to present itself through the pupil and wound, and a very slow, gradual delivery can be accomplished by the combined or alternated pressure of forceps and curette. Great pains are taken to remove by the curette any remnants of the cortical portion of the lens, so as to completely cleanse the anterior chamber and the conjunctiva of all debris.

o. Dressing of the Eye.—The spring speculum is now removed. The eyelids and eyelashes are then smeared with vaseline, over which iodoform is dusted. A pad of absorbent cotton-wool, with an outer layer of black cotton-wool, is applied to each eye and made firm with strapping. He has for many years discarded every form of bandage, as having no advantage over adhesive strapping (except for men with very hairy faces), and as having the very serious disadvantage that if there be any swelling of the eyelids there is no yielding, and therefore a possibility of injurious pressure. If all goes on well, and if there is but little pain and little watering of the eye, so that the pad remains dry, he leaves the eye undisturbed and unlooked at until the eighth day, when he changes the pad of the eye that has been operated upon and removes the pad from the other.

The advantages of the incision above described are as follows: (a) In so far as it approaches the flap operation, it possesses with that operation the advantage of extrusion of the cataract without any cutting of the iris. far as it approaches the linear, it obviates to a great extent the disadvantages of the flap, which were the great liability to serious prolapse of the iris and to the displacement of the flap by the upper eyelid. (b) The position of the greater part of the incision across the middle and not at the base of the iris allows the lens more readily to present at the wound, as there is less of the body of the iris to be displaced. (c) The greater part of the wound being linear and vertical to the corneal thickness, as soon as the lens has escaped and all cortical matter has been removed the wound closes absolutely and the edges fit, leaving a level surface which permits early sealing of the aqueous chamber. (d) The greater part of the wound being away from the base of the iris and rather towards the pupil, there is a remarkable facility for the escape, or rather the extrusion, of cortical portions of the lens, the reason for which is discussed later. (e) The incision being entirely in the cornea and away from the ciliary region, there is probably much less risk of iridocyclitis or of subsequent glaucoma.

#### TEARING (DISCISSION) OF OPAQUE AND CRUMPLED POSTERIOR CAPSULE, AND ITS RISKS.

There is, according to Landolt, great diversity of opinion as to the danger involved in needling the posterior capsule. Knapp and others consider it absolutely without danger if done with proper precautions, whereas a large number of operators only do it when compelled, because it is occasionally followed by irido-cyclitis or panophthalmitis. The question is of considerable importance and amounts to this: Are we, with those who fear bad results, to rest content with second-rate vision from an opaque capsule, or shall we, with Knapp, freely give such cases the chance of good vision, venturing a certain amount of risk? And what is the degree of risk? Judging from Mr. Teale's experience, the risk is small, as he has rarely had any trouble in consequence. A more important question is, What is the nature of the risk? This he believes to be in its beginning increased tension, which, unrelieved, may in some instances drift into irido-cyclitis or panophthal-How are we to deal with this increasing tension? This is an interesting point, and one which, perhaps, is not so fully appreciated as it deserves to be. He illustrates it by two cases which recently happened in his practice. both instances he tore with needles the opaque posterior capsule: the one after an extraction of traumatic cataract by suction, the other after an extraction of hard cataract by a shallow flap. Within forty-eight hours each patient suffered intense pain and dimness of vision from increased tension. On the third day in one case and on the fourth in the other he punctured with a broad needle through the upper part of the cornea and through the iris into the vitreous humor. The needle, turned sideways, allowed a few drops of vitreous humor to escape. In a quarter of an hour, in each case, intense agony was converted into perfect ease. There was no relapse of pain or of increased tension, and in a fortnight the subject of the extraction of hard cataract read J. 2. If unchecked, both cases would likely have ended in panophthalmitis. What he knows about the foregoing

method of dealing with such cases is this. In the year 1864, when in London, he told Sir William Bowman of a case of extraction by the semilunar flap which was causing anxiety, because, after discission of the capsule, it was falling off in condition on account of increased tension. He told him of the simple plan of puncture with a broad needle "through the iris into the vitreous humor." As soon as he returned home he acted upon this advice; normal tension was restored and vision was saved. He has now and then repeated the proceeding, though only rarely; but the two instances he has named occurred within the last six months.

He makes the following deductions from an analysis of his last hundred cases:

- I. Anæsthetics.—Of the one hundred cases, the first four were under ether; all the rest were under cocaine.
- 2. Iridectomy.—In ten a preliminary iridectomy was performed, and in one an iridectomy at the time of operation, leaving eighty-nine operations without iridectomy. Of the ten cases of preliminary iridectomy, five were done in order to artificially ripen immature cataract. The other cases were as follows: 1, a feeble woman with diabetes; 2, a woman with only one eye; 3, a man, aged eighty-four, recently recovered from pneumonia; 4, an old man with subacute glaucoma; and, 5, a man in whom the lens had been forcibly dislocated by a quack, with consequent glaucoma.
- 3. Accidents at the Time of Operation.—Out of the eighty-nine shallow flap operations the vitreous was lost in three instances, in all of which there was a fluid vitreous, implying defective suspensory ligament. In two cases the iris was grazed by the knife. The remaining eighty-four are recorded as without accident,—i.e., the operations were completed without a flaw. There is not a single record of dislocation of the vitreous from damage to the suspensory ligament during the operation.
- 4. Failures.—In the eighty-nine cases there were six failures. One occurred in the case of a drunkard; a second in a lady who had an outburst of hysterical weeping two days after the operation; in a third the iris was wounded; a fourth was in a man, aged eighty-four, whose other eye was also lost after an operation combined with iridectomy; and the fifth and sixth failed without obvious cause.
- Subsequent Iridectomy and Artificial Pupil.
   This is noted in eleven out of the eightynine.

In all these cases except two the resulting vision was good. Five read J. 1 easily; four are stated to have "good vision;" and two are

recorded as "poor," reading only very large print, such as J. 18.

- 6. Prolapse of Iris.—It is difficult to be quite certain in what proportion of cases this occurred, and he does not feel sure that every instance has been recorded. Probably the cases in which subsequent iridectomy was required represent the more serious instances of prolapse, and there have been a few cases with a small adhesion of the iris to the corner of the incision without serious prolapse.
- 7. Glaucoma as a Sequel to Extraction.—
  He can only recall one case. This may be explained, perhaps, by the fact that where a large prolapse occurs the case usually demands a subsequent iridectomy. The slighter occasional adhesions to the scar do not appear to produce glaucoma or to be any material disadvantage, and are not to be looked upon as substantial objections to the shallow flap operation.
- 8. Needling.—Of the remaining seventy-two cases, tearing (discission) of opaque and crumpled capsule is noted in fourteen cases, which leaves fifty-eight free from any secondary operation. Needling has, therefore, been an exceptional operation. That this is not a general experience may be inferred from a review of the new edition of Mr. Berry's work in the Lancet of April 29, 1893. The reviewer says, "As a matter of fact the operation of needling is almost always required if the patient desires to read ordinary type. Even when the lens has slipped out without leaving more than a trace of cortical substance, the posterior capsule and membrane of the vitreous humor become wrinkled and seriously interfere with accurate vision of either near or distant objects." De Wecker, speaking of the iridectomy extraction, says, "In another class of cases the cortical masses left behind remain unabsorbed, and the capsule becomes opaque in a few days. Afterwards capsulotomy or iridotomy often gives excellent results." He considers "these complications to be less common after the simple extraction, and that when they do occur the secondary operations are more successful than when extraction with iridectomy has been performed." The final results of the fourteen cases in which needling of the capsule was required are that ten read J. 1, one read 38, another 20, another is stated to have "very good" vision, and in the last case vision is not recorded.
- 9. Retention of Cortical Masses.—This difficulty seems to him to have disappeared under the operation by the shallow flap, in which the incision is at a distance from the margin of the cornea, and there seems to be a reason for this.

Take an illustration from hypopyon. If we try to let out the pus from the anterior chamber by making an incision at the margin of the cornea, we find it very difficult to evacuate, partly, no doubt, from the iris presenting at and blocking the incision; but if we make an incision, especially a radial one, towards the centre of the cornea, the pus and debris escape at once. The emptying of the anterior chamber allows the iris and lens to advance towards the centre and to compress and empty the angle between the iris and cornea. So, in extraction of cataract by an incision away from the angle, the body of the vitreous presses forward towards the back of the iris and forces the cortical portions of the lens away from the angle behind the iris into the pupil and so towards the incision; hence the dealing with cortical portions of the lens ceases to be a practical difficulty under the operation by the shallow flap. Landolt and De Wecker both speak of retention of cortical masses as if such retention were not uncommon and as if the dealing with them were a serious practical difficulty.

10. Dislocation of the Vitreous Humor .- This is a point of considerable moment in extraction of cararact. It occurs in cases in which the vitreous humor is healthy, and is caused by straining of the ocular muscles during the operation, whereby the upper portion of the suspensory ligament is damaged so that the unprotected vitreous bulges against the back of the iris and forces the latter between the lips of the wound, interfering with proper fitting and making it gape. This, no doubt, is what Knapp, of New York, refers to when he advises an iridectomy "whenever there is a tendency to prolapse and it is difficult to replace the iris." Fuchs, of Vienna, made the same remark to Mr. H. Secker Walker, of Leeds, to whom Mr. Teale is indebted for extracts from foreign journals bearing upon the question of retention or abandonment of iridectomy. In his series of eighty-nine cases there is not one instance of damage to the suspensory ligament, or of a single case in which there was any difficulty in replacing the iris. He attributes this immunity in a great measure to the use of cocaine, which allows very free manipulation of the eye without producing muscular spasm, combined with the support given to the base of the iris and the suspensory ligament by the portion of the cornea between the incision and the angle of the anterior chamber. There are two periods when this accident may occur. One is at the completion of the incision. This may be guarded against by the care of the assistant in charge of the speculum, who, by judicious leverage of the thumb and finger, can control and hold the eyelids away from the globe. The other is when the surgeon is using the cystotome for rupturing the anterior capsule, and a certain amount of pressure is of necessity made upon the lens. This danger may be avoided by making the holding forceps which grasp the conjunctiva below the cornea so to press against the eyeball as to steady the lens towards the cornea and cystotome.

### THE COMBINED METHOD OF CATARACT EXTRACTION.

MR. SWANZY'S paper on "The Combined Method of Cataract Extraction," presented to the Ophthalmological Society of the United Kingdom, June 8, 1893, is thus abstracted in the Lancet, June 17, 1893:

He advocated the combined in preference to the single method for the extraction of cataract, and reported on one hundred consecutive operations for uncomplicated senile cataract by the former method. The results obtained were: Ninety-five good, two medium, and three failures. The three failures were due to iritis. The accidents and irregularities which occurred during the operation were: Loss of vitreous in small quantity, twice; hemorrhage in the anterior chamber, such as to interfere with the normal progress of the operation, three times; section too short, four times; in two of these it was lengthened with Some cortical remains were left twenty-seven times, but in all except three they were insignificant in amount. Reflex vomiting during and after the operation was seen twice in different patients. No case of suppuration occurred, careful antiseptic measures being regularly employed. There were six cases of plastic iritis. Marked striped keratitis occurred six times, besides frequently in slighter degrees, but in no instance did it leave permanent damage behind it. The incision occupied the upper third or a little more of the corneal margin. A coloboma of about 3.5 millimetres was made, and great pains were taken to reduce each of the pillars into the anterior chamber completely. Such a coloboma was sufficient to obviate secondary iris prolapse by providing a way of exit for the aqueous behind the iris when the wound happened to be ruptured during the first few hours of the healing process. In this series incarceration of the iris occurred only once, and that was in one of the cases where reflex vomiting took place. As one of the

final steps of the operation, Mr. Swanzy laid much stress on search with forceps for any tag of capsule which might lie in that part of the wound which corresponded to the coloboma. If such a tag was captured, it was drawn out and snipped off, and thus prevented from becoming incarcerated in the wound during healing. In eighteen instances out of the one hundred capsule was found in the wound and abscised.

The President said that in extraction of cataract he much preferred the simple operation, and believed he obtained better results therefrom than by the combined method. He mentioned a case in which serious damage to the cornea followed the prolonged use of a strong solution of cocaine.

MR. CRITCHETT gave expression to his adherence to extraction by the combined method. He referred also to the danger to the cornea resulting from the too free use of cocaine. For some time he had been in the habit of anæsthetizing the iris with cocaine applied on the cystotome before doing iridectomy, and with very satisfactory results.

MR. DRAKE-BROCKMAN stated that he had abandoned iridectomy in cataract operations since 1878. He had performed four thousand extractions by the simple method since that date, with prolapse of the iris in about six per cent. He associated striped keratitis with the too free use of cocaine, but thought injurious results were less marked when the lids were closed.

MR. TWEEDY and MR. ADAMS FROST expressed themselves as being in favor of the combined operation.

MR. HILL GRIFFITH cited some of the results obtained at the Manchester Eye Infirmary, comprising over one thousand cases, by both procedures. The figures, so far as they would bear comparison, were slightly in favor of the simple operation.

MR. RICHARDSON CROSS thought it inexpedient to treat all cases indiscriminately by one method of operation. He thought the simple plan suitable for a large proportion of the straightforward cases and the combined method for others.

MR. SWANZY, in reply, said that an exact opinion ought to be based on a careful comparison of results, which was sometimes at variance with a general impression. He thought the objections to iridectomy arose from too free excision, which led to more frequent prolapse of the iris, and often to a coloboma so large as to be unsightly and disturbing to vision. These objections did not hold with a small iridectomy.

NOTES ON CATARACT EXTRACTION.

W. H. BATES (Virginia Medical Monthly, June, 1893) summarizes the results of his observations on cataract extraction from notes which he has taken during the past five years, as follows:

### 1. FAVORABLE CASES.

Cannot count fingers; whole lens opaque; no red reflex. Can count fingers; fundus indistinct. Sclerosed (sclerosed lens, the shadow by oblique illumination is on the same side as the light) lens cloudy; no clear spaces between striæ; color, white, yellow, red, black. Projection good; tension normal; the other eye healthy; absence of disease which is apt to be in the cataractous eye: myopia, retinitis, choroiditis, etc.

#### 2. Unfavorable Cases.

Immature cataract; clear spaces between striæ; front part of lens clear and can or cannot count fingers; wait, or do Förster or Pooley. Tension + or —. Opacity of cornea; post synechia; myopia; pterygium; conjunctivitis; blepharitis; dacryocystitis; nasal catarrh with and without discharge; disease in the other eye, which is apt to be in both; ill health; obesity. Hypermature cataract; small nucleus difficult to remove, and front part of the vitreous is usually fluid. Projection faulty or no perception of light; do not operate.

#### 3. PREPARATION OF PATIENT.

Bowels moved the day before and the day of the operation; bath. Train the patient to obey orders; to look down, up, right, left, and not to squeeze the eye shut; very important. Patient should become accustomed to handling. Nervous patients: wait till nervousness passes off.

### 4. Instruments.

Speculum not used if patient cannot be controlled; vitreous may be lost, etc. Manipulations can be made as easily as during the removal of a foreign body from the cornea. The operation without speculum or fixation forceps has advantages: Absence of nervous strain from the presence of the speculum and fixation forceps; patient is less apt to squeeze lids and lose vitreous; less local shock, and wound consequently heals better; speculum and fixation forceps irritate the eye; accidents fewer; less straining of the recti muscles, and the globe is not drawn backward into the orbit,—a cause of loss of vitreous, hemorrhage, etc.

Graefe Cataract-Knife. — Narrow, hollow ground. Back and edge should be straight,

or the aqueous escapes before the counterpuncture is made. Sharp on the point and the whole length of the edge; should be tested just before using by operator himself. A dull knife is often used and is a frequent cause of failure.

Speculum; Retractors; Strabismus-Hook.— Care not to press on the globe with instruments used to separate the lids during operation; if patient sneezes, lift the speculum from the globe, or the vitreous will be lost and the operation be a failure.

Fixation Forceps.—The teeth are sometimes imperfect and fail to grasp the conjunctiva.

Cystotome.—Sharp on the point and some distance from the point. A sharp cystotome is rare. (a) A dull cystotome causes a lacerated wound of the capsule, a wound that causes inflammation and opacity of the capsule; capsule opaque, poor vision. (b) A dull cystotome does not readily open the capsule, and efforts are often made to remove the lens when the capsule has not been sufficiently opened; capsule ruptured by pressure and vitreous lost, and poor vision obtained. (c) A dull cystotome may dislocate the lens during capsulotomy, and the subsequent removal of the lens be difficult.

#### 5. ANÆSTHETIC.

Cocaine, two per cent. to four per cent. Time used, ten minutes to sixty minutes +; the more nervous the patient, the greater the congestion of the eye, the longer is the time necessary to anæsthetize. With increased tension of the eyeball, as in glaucoma, a longer time is necessary. Cocaine acts better when the patient keeps the eyes shut and when used in both eyes. Anæsthesia when the pupil begins to dilate.

Objections to the Use of Cocaine.—Reduces intraocular tension; dries and hardens the cornea; predisposes to keratitis; predisposes to secondary hemorrhage, superficial and intraocular; use as little as is necessary.

Advantages of Cocaine.—Convenience; less apt to have loss of vitreous, prolapse of iris, and primary hemorrhage.

Ether or chloroform may be used when the eye is so congested that the cocaine will not produce anæsthesia and the patient is intractable.

Objections.—Vomiting afterwards may cause prolapse of the iris and even loss of vitreous; superficial primary hemorrhage.

#### 6. Antisepsis.

Instruments, except the knife, should be kept in boiling water for one hour; all dipped

in alcohol (ninety-five per cent.) just before using. Bichloride (1 to 3000) to skin of lids and to eyelashes; never inside the eye; has been followed by suppuration of the cornea. Mucus removed from the conjunctiva with warm boracic acid. Boiling water dulls the edge of sharp instruments; cleanliness is better than strong, irritating, antiseptic solutions.

### 7. SECTION.

Peripheral; above.

Corneal Section indicated.—Large cornea.

Advantages.—Less apt to have loss of vitreous or prolapse of the iris; absence of superficial hemorrhage.

Objections.—Removal of lens more difficult and section is bruised more.

Scleral Section indicated. — Small cornea, large lens, and in the operation with iridectomy.

Advantages.—Lens more readily removed; section is consequently less bruised; periphery of iris can be removed better.

Objections.—Loss of vitreous greater; superficial hemorrhage; prolapse of iris is more likely to occur.

Conjunctival Flap.—The section which includes considerable conjunctiva has less danger from secondary infection.

Size of Section.—Almost one-half of the corneal circumference; better too large than too small. If the section is too small, the removal of the lens is difficult and produces injurious traumatism to the whole eye; the removal of cortical matter is difficult. Section too small causes irido-cyclitis, suppuration of cornea, prolapse of iris, etc. Smooth section heals better. Bruised section causes secondary prolapse of the iris. Slanting section is made with the knife parallel to the plane of the iris.

Advantages.—Less apt to have loss of vitreous; healing better; with iridectomy, periphery of iris removed better.

Objections.—More difficult to remove the lens.

Steep section is made with the knife held more perpendicular to the cornea; has the advantage that the lens and cortex can be more easily removed.

Objections.—Wound gapes; loss of vitreous promoted.

A combination of the slanting and steep section is often made; the slanting section until just before withdrawal of the knife, when the section is finished with the knife cutting perpendicular to the cornea.

How to prevent Premature Escape of Aqueous.—In making the section always hold the

back of the knife gently down until the counterpuncture is made; the back of the knife should be straight. Avoid splitting the cornea; enter the anterior chamber with the knife held perpendicular to the cornea.

Measures to avoid cutting the Iris.—After the counter-puncture is made, while holding the heel of the knife stationary, cut rapidly upward with the point until the edge of the knife is beyond the margin of the pupil; then cut with the heel of the knife. If the iris falls over the edge of the knife, free it by turning the edge of the knife forward, and manipulate gently, trying to bring the point of the knife up first. No success; finish the section, and if the iris is very much bruised or cut, do an iridectomy.

Section gapes when tension of the eyeball is +; lens swollen: patient looks down.

When to stop and postpone the Operation.—Puncture wrong. Escape of aqueous as soon as puncture is made. Counter-puncture difficult; point of knife dulled by making puncture. Unruly patient, sneezing during operation; section left with a bridge; not completed at the top; wait till the patient is quieted, or use ether or chloroform to finish.

#### 8. IRIDECTOMY.

Operation without Iridectomy.—In selected cases results are better than where iridectomy is done. Large corneal section. More difficult to remove lens and dibris. Pupil not dilated. Primary prolapse of the iris always occurs; may return spontaneously after closing the eye, or by warm or cool water syringed against the iris, or by use of the spatula.

Operation with Iridectomy.—Section more in sclera; small iridectomy better than large.

Indicated.—Cataract complicated with posterior synechia, myopia, choroiditis, etc.; tremulous iris; difficult expression of lens from rigid pupil or tough capsule; iris severely wounded during section; prolapsed iris not easily returned; lens dislocated before or during extraction (?); vitreous lost before lens removed; wound gapes, showing decided + tension; chronic glaucoma; best results obtained by doing iridectomy months or years before the extraction.

### 9. Förster's Operation for Ripening Cata-

Small iridectomy above; scleral opening with lance-knife; massage of the lens with a blunt-pointed strabismus-hook, by rubbing over the cornea, pressing the cornea well against the lens.

Objections.—Vitreous more apt to be lost during extraction; scoop to extract lens oftener

necessary; patient may lose self-control at the extraction; all have considerable cortex; tendency to iritis; results, vision not so good.

Förster not indicated.—Sclerosed lens; cataract in myopia; soft cataract.

Pooley's Operation for ripening Cataract without Iridectomy.—Pupil dilated with atropine; corneal section; results worse than Förster's. (Perfect results have been obtained (20) after the lens had been ripened by Förster's and Pooley's operation.)

### 10. LACERATION OF CAPSULE.

Can be done with knife before the counterpuncture is made; objectionable. Capsule tough; do iridectomy. Lens hard to express and vitreous may be lost; peripheral capsulotomy (H. Knapp).

Advantages.—Prevents prolapse of capsule; less plastic iritis.

Disadvantages.—Remnants of cataract shut up in capsule; secondary operations usually necessary; wrinkling of capsule may occur.

Free central laceration of capsule is followed by the best results.

Laceration of posterior capsule after lens is removed, to obviate secondary operations, is not always successful; danger, loss of vitreous.

If there is clear lens substance, puncture lens with cystotome, and rotate the lens cautiously on its antero-posterior diameter to separate the lens from the capsule.

Capsule is put on the stretch by slight pressure on the globe.

#### 11. REMOVAL OF THE LENS.

Difficult, when the cystotomy is not sufficient; lens dislocated; large lens; small lens; capsule tough; section too small; rigid pupil; posterior synechia; vitreous fluid; unruly patient.

By Pressure.—Pressure always gentle and continuous. Begin by pressure with spatula at lower border of cornea, pressing directly backward until the lens appears in the wound; then follow the lens out with gentle pressure of the spatula, passing upward over the cornea. Counter-pressure on sclera above the wound is a great help, but it is not usually necessary, and may cause loss of vitreous. If the upper border of the lens becomes lodged behind the section, apply pressure above the wound, to cause the lower border of the lens to rotate upward and be delivered first.

By Scoop Extraction.—Always employed when the vitreous is lost before the lens is removed. Always do an iridectomy first. Indicated also when the lens is dislocated consider-

ably; vitreous fluid (?); pressure extraction difficult (?).

#### 12. REMOVAL OF CORTICAL MATTER.

Advantages.—Lessens iritis; good vision obtained without secondary operations. Too prolonged efforts to clear the pupil may be followed by bad results, from loss of vitreous, severe iritis, suppuration of the wound, secondary prolapse of the iris.

Methods.-Massage of the cornea with the spatula, from periphery to the centre (from above as well as below, etc.), forces cortex into the pupil. Pressure backward on upper edge of the wound, section gapes and cortical matter flows out when aqueous is present. Close the eye and wait, which allows aqueous to reaccumulate, and massage again when necessary. Close the eye and rub the lids gently over the cornea with a rotatory movement; keep edge of lids away from the wound to prevent infection from eyelashes. Syringing against the wound with warm boracic-acid solution. Instruments in the anterior chamber to remove cortical matter are objectionable, although sometimes of advantage. Pupil black and patient counts fingers, cortical matter generally sufficiently removed.

### 13. BANDAGE AND DRESSING.

Bandage of white flannel or gauze, changed twice daily; bichloride (1 to 3000) dressing; cotton wet with solution. Indicated when patient is unruly and objects to dry dressing, and in chronic conjunctivitis, pterygium, dacryocystitis, to prevent infection.

Dr. Chisholm's Dressing.—Operated eye only closed with sticking-plaster; no dark room; patient not in bed. Has the advantage that healing takes place with slight conjunctivitis and photophobia. Bandage omitted when patient's restlessness is increased by wearing it, and ice-cloths used. Bandage causes conjunctivitis, and should be left off after wound is well closed. Too tight bandage keeps the wound open. Bandage especially indicated: prolapsed iris; reopening of wound; keratitis (?).

#### 14. ACCIDENTS WHEN OPERATING.

If the section is too small, enlarge with scissors. Avoid pricking skin of nose or lids with the point of the knife. If vitreous be lost before lens is removed, iridectomy and scoop extraction; if lost after lens is removed, close the eye at once and bandage; not necessary to cut it off.

Causes of Loss of Vitreous.—Straining of the

patient; pressure too great in expelling the lens; tension +; dislocation of the lens. Prolapse of iris reduced spontaneously by massage, by syringing, by spatula. Not reduced, do iridectomy. Iris cut during section, iridectomy may be advisable. Prolapsed capsule difficult to recognize: appearance of gelatinous thread. Danger of infection occurs in extraction with or without iridectomy.

Hemorrhage. — Superficial hemorrhage is caused by wounding iris or conjunctiva. Sudden reduction of tension causes superficial and deep hemorrhage. Blood removed from anterior chamber by massage, irrigation, moist cotton against wound, by forceps. Slight superficial hemorrhage is not dangerous to the eye. Severe superficial hemorrhage is followed sometimes by suppuration of the cornea, by severe iritis, and by thickening of the capsule.

Deep Hemorrhage.—Preventive: large doses of bromide. Symptom preceding: deep-seated, severe pain. At once give hypodermic of morphine in the temple; vomiting and prolapse of iris may follow a few hours later. Deep hemorrhage may force out vitreous and retina; eyeball may be lost.

Collapse of the Cornea.—Causes: lack of tone in corneal tissue; patients debilitated. Loss of one-third or more of the vitreous may result in suppuration of the cornea.

Dislocation of the Lens during Extraction.— Caused often by a dull cystotome. Push lens back to pupil with cystotome when possible. Try very gentle pressure; if vitreous presents, do iridectomy and scoop extraction.

### 15. ACCIDENTS DURING HEALING.

Iritis begins early, or after several days or a week. Pain present or absent. Use atropine as soon as the anterior chamber is re-established; hot water by the hour, cathartics, leeches, etc.

Secondary Prolapse of Iris.—Occurs at any time, even months after the operation. Pupil is always distorted or displaced in incarceration and in prolapse of the iris. Favored by iritis (swollen iris becomes adherent to the wound): tension of the globe +; tardy union of the wound; restless patient; debris in pupil, blood, cortex; swelling of cornea adjacent to wound; loss of vitreous, iris drawn up behind wound; manipulation of eye; bruising corneal section; straining at stool; debilitated patient, collapse of cornea; bandage too tight, wound opens. Prolapse of iris, after extraction without iridectomy, less dangerous than after extraction with iridectomy. Incarceration and prolapse of the

iris during healing has been reduced twenty-four hours after the extraction and a central circular pupil obtained (Hardy). Iridectomy does not prevent prolapse or incarceration of the iris. Iris in wound is always a channel for infection. Prolapse of the iris may be left alone when there are no symptoms.

Prolapse of Capsule.—Wound does not unite; always remove prolapsed capsule.

Suppuration of the Wound.—Very serious; occurs often without pain; occurs twelve hours after the operation, and later, even years after.

Causes.—Not always from outside infection: nasal catarrh, with and without discharge; chronic conjunctivitis; pterygium; prolapse of the iris; prolapse of the capsule; too strong bichloride eye-wash; infection from eyelashes; debility; alcoholism; restless patient; injury to the eye during sleep; vitreous in the wound; severe hemorrhage; collapse of the cornea; dacryocystitis; bad sanitary surroundings,—foul air.

Prophylaxis.—Treat catarrhal inflammations of eye, nose, and tear-passage. Care in cleansing the eye: do conjunctival flap section; wet dressing, bichloride cotton, changed often,—every two hours,—till wound closed. Pterygium removed before the extraction, or, if not, the section should be made outside the pterygium; bichloride dressing. Prolapsed iris: antiseptic dressing. Debility: quinine, milk-punches. Laxatives: fresh air, baths. Alcoholism: do not stop alcohol. Restless patient: do not confine in bed; may have to leave off bandage.

Treatment of suppuration of the cornea sometimes stops the disease and clears the cornea.

Local.—Hot water (110° to 115° F.) by douche to the cornea; very painful, very difficult to carry out, and usually must be done by a physician. Time: at least one hour four times a day. Hot bichloride, galvano-cautery, iodoform powder, atropine, pressure bandage, are much less efficient than the constant use of hot water day and night.

General Treatment.—Tonics, even to apparently robust patients; quinine, feeding, alcohol, etc. Cystoid cicatrix: pressure bandage; iodoform powder dusted on cicatrix.

Glaucoma; Iridectomy. — Panophthalmitis, caused by too early use of the eyes; caused by infection: enucleation after or before severe inflammation. Deep hemorrhage, when preceded by severe pain, may be prevented by hypodermic morphine in temple. Detachment of retina, also of choroid, is caused by too rapid operation and by loss of vitreous. Hyperæmia: rest in bed, hot water, bandage, atro-

pine. Hypopyon: bandage, paracentesis. Hot water is often sufficient to relieve, but must be applied by douche. Opacity of cornea is caused by too strong cocaine, by strong bichloride, by keratitis. Reopening of the wound is caused by too tight bandage, movements of restless patient, feeble patient. Sympathetic ophthalmia; operated eye inflamed or painful for some time: enucleation. Insanity: some elderly patients become insane from the confinement in bed.

#### 16. TREATMENT DURING HEALING.

Ice is indicated when bandage cannot be worn; used as long as agreeable to the patient. Hot-water bathing benefits iritis and keratitis, and seems to clear the pupil. Atropine always used and as soon as the anterior chamber is reestablished; its use continued until the eyeball is no longer red. Eserine, to prevent prolapse of the iris, is of doubtful value. Astringents for conjunctivitis. Leeches to relieve severe pain. Tonics and fresh air are generally useful. Stout patients need tonics. Full diet as soon as patient can take exercise.

#### 17. SECONDARY OPERATIONS.

Needling may cause purulent iridophacitis, cyclitis; early before capsule is thickened; two needles to prevent traction; one may be pushed through the ciliary region behind the membrane. Iridotomy when the capsule is thickened or adherent to the iris. Keratome for incision through the cornea and capsule. De Wecker's scissors to divide capsule and iris; avoid rubbing the inner surface of the cornea with the scissors. Atropine before and after the operation. Iridectomy rarely does harm.

### THE TREATMENT OF NEPHRITIS OF PREGNANCY.

LANCEREAUX (Annales des Maladies des Organes Génito-Urinaires, June, 1893), after discussing the etiology of the nephritis of pregnancy, which he attributes to the injurious influence upon the kidney epithelium of certain effete products which are eliminated by means of this organ, states that the patient should be submitted to an exclusive milk diet. If, in spite of this, the quantity of urine excreted remains small, appropriate remedies should be administered to favor diuresis. this is unsuccessful, repeated purges are indicated, and when uræmic symptoms develop these must receive prompt and energetic treatment. Gastro-intestinal troubles should not be very vigorously combated, since otherwise the uræmic poison may exert its injurious influence upon the nervous system. Narcotics should not be given. Indeed, it is often desirable to administer an emetic, even though the patient is complaining at the time of frequent vomiting. When the eclamptic seizure develops in the primipara in the sixth month of pregnancy, enemata of chloral followed the next day by purgative enema are indicated. The chloral should be used in doses of from 60 to 75 grains, and should be carried far up the bowel by means of a catheter to which a syringe is attached. Chloroform is also extremely useful; bleeding is only indicated when there is coma or signs of pulmonary congestion. As to the histological lesion, which consists of a fatty degeneration of the epithelial cells of the convoluted tubules, aside from the exclusive milk diet, there are no means of markedly influencing it. But this is of no particular significance, since, if urinary insufficiency is guarded against, convalescence is sure.

### GUAIACOL IN THE TREATMENT OF BONE TUBERCULOSIS.

GRIFFITH (American Surgery and Gynæcology, vol. iii., No. 9) states that—

Guaiacol, where used locally or internally, is a powerful antiseptic in tuberculosis.

Tuberculous patients to whom guaiacol is given internally show marked increase in weight, strength, and appetite, if the use of the drug is continued long enough.

The exhibition of guaiacol in joint- or bonetuberculosis should be continued through a long period of time.

Guaiacol, unlike its close relation, creosote, is non-irritating to the stomach, and is well borne for a long period.

Lastly, guaiacol is a great aid to the surgeon in the treatment of all forms of tuberculosis of joints or bone.

### THE BEST DRESSING OF THE UMBILICAL CORD.

Lvow (Revue Mèdico-Chirurgicale des Maladies des Femmes, May 25, 1893), under the above title, holds that glycerin is the best dressing for the cord, because it is not only antiseptic, but also drying in its effect. He has used it in five hundred cases, and finds that it mummifies the cord and causes it to drop off in three to five days. The mode of procedure is as follows: After the cord has been ligated and cut, its visceral end is dried most carefully with absorbent cotton, and hermetically sealed by a thin layer of cotton moistened with pure

glycerin. Over this are applied a few turns of a tarlatan bandage. This dressing is not changed until the cord comes away. During this period the child is not bathed; the cord is not even inspected, the external tarlatan bandage being changed only when it becomes soiled. The granulating surface left by the dropping off of the cord is perfectly healthy, non-inflammatory, and cicatrizes in from nine to ten days under a dressing of nitrate of bismuth or talc.

### SUBCUTANEOUS INJECTIONS OF MER-CURY IN THE TREATMENT OF SYPHILIS.

BALZER (Journal de Médecine et de Chirurgie Pratiques, June 10, 1893) states that subcutaneous injections of mercury are indicated in syphilis when it is necessary to act promptly and when the gastro-intestinal canal will not stand the ingestion of the drug by the mouth. Among the soluble salts, sublimate is the one commonly employed. The formula is as follows:

Bichloride of mercury, 5 parts; Chloride of sodium, 10 parts; Distilled water, 2000 parts.

The chloride of sodium keeps the sublimate in solution, and renders the injection less painful. This injection is still better borne if .25 part of hydrochlorate of cocaine is added.

Cyanide of mercury is less painful than bichloride. The solution of this drug commonly employed is—

> R. Cyanide of mercury, 1 part; Distilled water, 100 to 150 parts.

The inconvenience of this solution is that it rapidly undergoes decomposition. This holds true with the benzoate of mercury, which is a particularly valuable salt in hypodermic medication.

Benzoate of mercury, 30 parts; Chloride of sodium, 10 parts; Cocaine, 150 parts; Distilled water, 400 parts.

The technique of injection should be observed most scrupulously. The point of election is five fingers'-breadth behind the great trochanter. The solution should be driven into the muscle and not into the subcutaneous tissue. Pain is sometimes extremely severe, but abscesses are rare when the syringe is clean and the injection is driven in deep. The quantity to be employed varies according to the case. In general terms it is necessary to inject from 25 to 30 centigrammes of the sublimate

solution to cure an outbreak of syphilis. Consequently about thirty injections are required, since one centigramme is driven in each time. After thirty injections the treatment is continued by means of pills. This method requires daily injections, is only advised in cases of violent or sudden outbreak, and is especially serviceable in cerebral or ocular syphilis.

Injections of the insoluble preparations have the great advantages that but few injections are required and the intervals between these injections may be long.

The two insoluble salts which receive most favor are calomel and the yellow oxide of mercury. The latter, somewhat less painful than calomel, is perhaps the favorite.

The formula for the injection mixture is as follows:

R. Calomel, 1.5 parts; Olive oil, 15 parts.

Mercury is sometimes employed. A favorite formula is the following:

Purified mercury, 20 parts; Tincture of benzoin, 5 parts; Liquid vaseline, 40 parts.

This is Neisser's formula, and it and similar preparations are termed gray oil.

The injection of insoluble preparations is less painful than the soluble salts. In making the injection the needle of the syringe must be perfectly dry. This needle, detached from the piston, is first driven in, then allowed to remain for a moment, while the surgeon looks for the escape of blood from its canal. This, of course, would indicate that the point of the needle had entered the calibre of a vessel, and that if the solution of mercury were driven in, it would be carried directly along the bloodchannel and occasion pulmonary embolus, attended with serious, if not fatal, symptoms. It is advisable to wait for a full minute before attaching the syringe and driving in the injec-The insoluble proportion of mercury is reduced by the tissues and is absorbed. puration is always produced at the seat of injection, but this is non-microbian in nature and is easily reabsorbed. The pain lasts for two or three days. When abscesses form they should not be opened hastily, in view of the fact that they undergo spontaneous resolution. dose employed is from 5 to 7 centigrammes of mercury for each injection. The injections are repeated not more frequently than once in five days. After twenty to twenty-five centigrammes of mercury have been injected the treatment should be repeated at intervals of from ten to fifteen days. In general about thirty to forty centigrammes should be injected. Frequently a much smaller dose suffices; sometimes a single injection is sufficient to clear up all indications of syphilis. The dose mentioned should not be exceeded. If it seems advisable to give more mercury, this should be administered by the mouth or by means of inunctions. Before starting the course of injections the condition of the kidneys should always be examined into, for if there is albuminuria it is probable that there is such crippling of the kidneys that elimination of the mercury will take place in an imperfect way, and hence there is liability to such an accumulation of the drug in the system that toxic symptoms will be produced. Twenty-five to forty centigrammes of mercury should be administered in twenty to forty days. If sixty centigrammes are required, treatment should continue for two or three months.

### PERMANENT CATHETERIZATION IN CASES OF URINARY INFECTION.

. LEGUEU (Annales des Maladies des Organes Génito-Urinaires, No. 70, tome xi.) states that when the bladder is infected constitutional symptoms are dominated to a great extent by the condition of retention. Distention of this viscus also plays an important rôle, since it renders the vesical walls particularly liable to infection. In cases of stricture, or where there is prostatic obstruction, fever often never develops until there is vesical retention. In young subjects the muscular coat of the bladder still resists, and in spite of infection constitutional symptoms develop slowly, because vesical distention itself is slow in developing; but in advanced age, when the bladder-muscles are weakened, they readily yield when there is resistance to evacuation, and distention quickly takes place. When this phase is reached febrile attacks take place. As soon as the bladder ceases to evacuate its contents its muscular efforts must be supplemented by instrumental aid, usually by repeated catheterization. urine can be drawn regularly and the fever disappears; but in certain cases, in spite of this treatment, fever persists, or is even exaggerated. Sometimes following each instrumentation there is distinct rise in temperature. Under such circumstances permanent catheterization is particularly indicated. Numberless cases attest the value of this procedure, and indeed the teachings of general surgery would lead to its adoption, since by this means a pus-containing cavity is emptied of its toxic contents. action of a permanent catheter is not limited to the bladder alone; it often produces a most beneficial effect upon the kidney, relieving congestion, with which that organ is affected in all cases of marked vesical distention. The polyuria and the digestive troubles from which those patients commonly suffer are also permanently ameliorated.

A case in point is quoted. A patient had gone into the hospital suffering from perineal abscess, due to extravasation and retention with The abscess was opened and the bladder was gradually emptied. The patient suffered from polyuria and high temperature. Internal urethrotomy was then practised, and a No. 17 catheter passed through the urethra into the bladder. The temperature dropped to normal and the polyuria disappeared. The advantages of a permanent catheter are that it allows of the evacuation and disinfection of the bladder, and is not accompanied by the traumatism so often encountered by repeated introduction. The objection urged against it is that it favors infection. This objection, however, is no longer tenable in the light of modern knowledge of antisepsis.

### THE TREATMENT OF POST-PARTUM HEMORRHAGE.

HERMAN (Revue Médico-Chirurgicale des Maladies des Femmes, May 25, 1893) states that compression of the vessels is the most rational means of arresting post-partum hemorrhage. As preventive means the following considerations should be borne in mind: To render assistance if the uterus is inactive; to pay most minute attention to the details of the third portion of delivery. As treatment he advises massage of the uterus, with the hand placed upon the abdomen. If this is not successful, the introduction of the hand into the uterus to prove conclusively that it is perfectly empty. Finally, injections of hot water within the uterine cavity. If these means fail, persistent bimanual compression of the uterus should be made, assisted in its action by putting the infant to the breast. Injections of iron solution are dangerous, because they may cause death by distention of the uterus, peritonitis, or septicæmia. The introduction of iodoform gauze is not without its disadvantages; sometimes it is a means of allowing air to enter the veins, and it always prevents normal contraction of the uterus.

### THE EMPLOYMENT OF CANELLA OR . CINNAMOL.

Basing his experience upon the publication of Chamberland, Championniere (Journal de

Médecine et de Chirurgie Pratiques, June 10, 1893) states that the former showed that many essences are strong antiseptics joined to a direct and immediate action, and even more valuable remote effect, perhaps due to the tension of the vapor, and experimented at length with the essence of canella, since this had been proved to have the most powerful antiseptic effect. an excipient in itself antiseptic and non-irritant, retinol was found to serve admirably. completely dissolves the essence and allows of the use of strong solutions. The essence of canella as found in commerce is altered by the light and by contact with air. When double distilled, and kept from air and light, it is much more powerful as an antiseptic lotion. Thus purified it has been named cinnamol by André to distinguish it from the preparation of commerce. In addition to the cinnamol, another antiseptic has been added, which is more fixed and permanent, but is yet non-irritant; this is naphthol. The preparation now made and employed by Championniere is as follows:

> Retinol, 75 grammes; Sterilized wax, 25 grammes; Essence of canella, 1 gramme; Beta-naphthol, 1 gramme.

A piece of lint is spread with this pomade and applied directly to the wound. Championniere has thus dressed a series of laparotomies, wounds with drainage and without, such as radical operation for hernia and wounds of the breast, etc. All of the wounds remained antiseptic. When drainage was employed the track of the tube remained sterile. The dressing is kept in place for ten to eleven days. When applied to affected surfaces it rapidly diminishes suppuration and exerts a happy effect upon the inflammation.

### QUENUE'S OPERATION FOR HEMOR-RHOIDS.

QUENUE'S operation for hemorrhoids, published in the Revue de Thérapeutique Médico-Chirurgicale, June 15, 1893, is practically a modification of Whitehead's operation. He holds that this latter procedure is open to the objection that the coaptation of raw surfaces is difficult; that if the patient has a movement of the bowels before six or seven days there is a chance that the operation will fail, and that if union is not complete at one point there results a cicatrix which readily ulcerates. What he terms a simplification of the Whitehead operation is as follows: An incision is made at the union of the skin and

mucous membrane, or a little beyond this. This incision goes half around the anus, and the mucous membrane is dissected up with the hemorrhoids which adhere to it. tion is carried up until sound mucous membrane is reached. This is determined by the rosy color of the latter. In place of excising the mucous membrane, the varicose veins are cut from it by means of small curved This procedure is facilitated by introducing a finger within the gut, then with the scissors the veins are cut away from the raw surface, leaving only a very thin layer of mucous membrane, which is entirely deprived of its cellulo-vascular coat. Hæmostasis is secured by ligatures or forceps, and the wound is sutured. The same procedure is then carried out on the opposite side of the bowel. Some iodoform cotton is introduced into the rectum for the purpose of exerting moderate compression upon the two mucous flaps, thus keeping them in close contact with the subjacent tissues. The sutures are removed the fifth or sixth day. Even if there is a fæcal evacuation before this, the line of suture is not interfered with, since it is placed without the anus and can be readily protected by the If the hemorrhoids are external they are incised; at the same time clots are turned out and the surface of the open veins is rubbed with a tampon soaked in sublimate. The incision is then sutured, and union takes place by first intention. Quenue claims for his operation the advantages that the mucous membrane is left entire, that there is no retraction, there is not such tension that the sutures cut through the raw surface, the mucous membranes unite quickly to the surrounding tissues, and a proper antiseptic dressing is readily kept in place.

### ANTERIOR ABDOMINAL HYSTEROPEXY FOR PROLAPSE OF THE UTERUS.

THER-MIKAELIANTSE (Annales de Gynécologie et d'Obstétrique, vol. xxxix., 1893) favors suturing the anterior abdominal wall to the posterior wall of the uterus for the relief of prolapse. The reason for this is, there is some likelihood of having a subsequent hernia form. The intrauterine pressure is not exerted upon the utero-sacral ligaments, and allows them to regain their normal function.

### REPORT OF FIVE CASES OF ALEXANDER'S OPERATION.

CUGIANI (Annales de Gynécologie et d' Obstétrique, vol. xxxix., 1893) reports that in one of

his cases it was impossible to find the round ligament on either side. The remaining four cases resulted in perfect cures, the pain and metrorrhagia disappearing; some nervous troubles, however, persisted. Alexander's operation can be done with the best of results in cases of retroflexion, retroversion, and prolapse, hysteropexy being indicated only in cases of very marked prolapse.

### EXTRAPERITONEAL HYSTEROPEXY FOR THE TREATMENT OF DEVIATIONS OF THE UTERUS.

CRESPI (Annales de Gynécologie et d'Obstétrique, vol. xxxix., 1893) says the uterus is generally found against the abdominal wall. In one case he incised the abdomen down to the peritoneum, around the uterus, made it fast with sutures, and closed the abdominal wound. The author reports four successful cases.

### THE RECIPROCAL EFFECTS OF PREG-NANCY AND CHILDBIRTH ON THE OPERATION FOR SHORTENING THE BROAD LIGAMENT.

ALEXANDER (Annales de Gynécologie et d' Obstétrique, vol. xxxix., 1893) says that many have accused the operation of Alexander of provoking abortions. In reality the author states that the shortened round ligaments do not entirely support the uterus, but they maintain it in a normal position. Enlargement of the uterus during pregnancy does not produce lengthening of the round ligaments, but simply dilatation at the point of ligamentous attachment. Any lengthening that might take place is corrected during the post-puerperal period. The author reports seven cases operated upon by himself, all having become pregnant; the uterus did not return to the position for the relief of which the operation was required.

### THE TREATMENT OF ECLAMPSIA.

CHARPENTIER (Annales de Gynécologie et d'Obstétrique, vol. xxxix., 1893), in an elaborate report on the treatment of eclampsia, makes the following statements:

All women suffering from albuminuria are liable to eclampsia, and should be placed immediately on a milk diet, which is by far the best preventive. At all times during the convulsions the women become very much cyanosed, and from four to five hundred grammes of blood should be drawn, followed by the administration of chloral.

Allow labor to take place spontaneously, but at the same time hasten it as much as possible.

Sometimes the contractions of the uterus towards the close of labor become very feeble. In this case it is necessary to apply the forceps or perform version if the infant be alive, and to use the cephalotribe if it be dead.

Reserve the induction of labor for those cases where medical treatment has not completely relieved the aura.

Reject absolutely Cæsarean section and forced labor; deep incisions into the neck of the uterus and bleeding are preferable.

Gueniot claims that there are three forms of eclampsia:

- 1. Hypertoxic.
- 2. Neurasthenic.
- 3. The common form.

Against the toxemia there is little to be done.

For the reflex excitability chloroform inhalation is the best treatment.

In certain very grave cases it is necessary to use chloral alone. Tarnier says the prognosis is always extremely grave and the mortality is about twenty-five per cent.

### THE TREATMENT OF GLANDULAR ENDOMETRITIS OF THE CERVIX.

HARTMAN (Annales de Gynécologie et d'Obstétrique, vol. xxxix., 1893) says this form of endometritis is very common in young girls, and is characterized by a discharge of white or light-green, thick, tenacious fluid. The presence of the gonococcus has been noted in a number of cases. It obstinately resists curetting, but has been ameliorated by such treatment, and indeed sometimes cured.

Doleris recommends scarification of the mucous membrane, which will allow the penetration of medicinal agents; while Bouilly suggests ablation of the mucous membrane of the diseased area.

After the mucous membrane has been removed, the cervix should be freely painted with a mixture of glycerin and creosote (1 to 3), and the cervix and vagina packed with iodoform gauze. The dressing should be removed in forty-eight hours, and a fresh piece of gauze, wet with glycerin creosote, should be inserted within the cervix. There is occasionally serious hemorrhage during this operation, which requires a tampon for its relief. If the disease returns, the cervix should be amputated, as recommended by Schroeder.

#### OVARIOTOMY IN INFANTS.

ALDIBERT (Annales de Gynécologie et d'Obstétrique, vol. xxxix., 1893) says the first ovariotomies performed during infancy were reported by Jouon and Bryant. Schwartz has collected five cases.

Hennig reports twelve cases, nine of which were between twelve and fifteen years of age, with six recoveries; three cases, aged between three and eight, with two recoveries.

Most of the operations were for ovarian cysts, while others were for tumors of the ovary proper.

### CALOMEL SOAP IN THE TREATMENT OF SYPHILIS.

WATRASZEWSKI (Annales de Dermatologie et de Syphiligraphie, vol. iv., 1893) describes the preparation of the soap as follows: The calomel, in the form of vapor, is mixed with a potash soap, in strengths of 1 to 2 and 1 to 3. It forms a soft mass of a white color.

From two to three grammes of the soap should be rubbed in every day.

The inunctions should be carried out in the following manner: The parts to be rubbed should first be washed with ordinary soap and water, and the patient then having taken a bath, the soap should be applied and rubbed in with a rotatory motion of the hand for from ten to fifteen minutes.

The advantages claimed for this method of treatment are as follows:

- 1. Its application takes but little time.
- 2. The soap is odorless and colorless, and it does not soil the linen.
- 3. The inunctions never irritate the skin, except when applied too often in the same region.

The rapidity of cure corresponds in time to that resulting from the use of blue ointment.

### THE MICRO-ORGANISM OF SOFT CHANCRE.

KREFTING (Annales de Dermatologie et de Syphiligraphie, vol. iv., 1893) reports, as a result of his experiments, that in the pustules produced by inoculation there is found an organism similar in every way to that described by Ducrey. All attempts at culture have given negative results. Examination of the edges of the excised sore has also given negative results.

Jullien reports the same experience, and was able to reproduce the sore by inoculation through three generations.

Unna employs a special mixture of glycerin

and ether for coloring, and has found an organism in five instances similar to the streptobacillus of chancroid.

The organisms during their growth form long chains in the tissues, and they are almost always found in the lymphatics and between the cells.

The author has also found this bacillus in the virulent bubo that had opened itself under a bandage.

All attempts to cultivate on artificial media have proven failures.

The organisms exist in many of the pustules in a pure state. The different methods employed to show the organisms are in themselves very unsatisfactory.

As a stain, that suggested by Unna is probably the best. A mixture of oil of aniline and xylol will decolorize satisfactorily. Alcohol cannot be used, as it removes the stain from the organisms.

The organisms are generally found in great numbers.

These researches indicate the need of antiseptic treatment in all cases of chancroid. Among the best modern treatments are spraying with carbolic lotion (1 to 40), applications of chloral (1 to 10), or campho-phenique full strength, and particularly cleansing and sterilizing by sprays of peroxide.

### THE TREATMENT OF FRECKLES.

VAN HOORN (Annales de Dermatologie et de Syphiligraphie, vol. iv., 1893) describes his method of treating freckles by flaying. The same method may be employed for the relief of cicatrices, acne rosacea, and other lesions which deform the face. The superficial layer of the skin of the entire face can be removed in one piece.

Several times daily the skin of the diseased part is rubbed with the following ointment:

Resorcin, 40 grammes;
Oxide of zinc, 10 grammes;
Silica, pure and anhydrous, 2 grammes;
Lard, 20 grammes;
Olive oil, 8 grammes.

In the course of three or four days the skin becomes parchment-like and cracks. The moment that this condition appears the following solution should be applied:

R. Purified gelatin (white), 4 grammes; Oxide of zinc, 3 grammes; Glycerin, thirty per cent., pure, 5 grammes; Water, 8 grammes. Afterwards the part should be covered with wadding to prevent sticking.

In the course of a few days the old epidermis can be easily detached with the dressing.

According to Fournier the method is very painful.

### THE TREATMENT OF ALOPECIA WITH ESSENCE OF WINTERGREEN.

HALLOPEAU (Annales de Dermatologie et de Syphiligraphie, vol. iv., 1893) has made some experiments as regards the value of the essence of wintergreen in the treatment of alopecia. In one case six patches were found on one side of the head, which had been treated with tincture of cinnamon and had not improved.

After one month three of these were treated with essence of wintergreen, while the remaining three were treated daily with frictions with the essence of cinnamon with four parts of ether.

As a result of this observation the patches treated with the wintergreen healed immediately, while those treated with the cinnamon showed no signs of improving.

In applying the wintergreen it may be mixed with an equal part of ether, or one part of vaseline to five of the essence.

The ethereal solution is very active and is rather to be preferred.

When used it is to be thoroughly rubbed in the diseased part and applied once daily.

Its beneficial effects result from its producing an inflammation of the integument and transforming it into an unfavorable medium for the growth of parasites.

The application is not painful.

### THE PREVENTIVE TREATMENT OF SYPHILIS.

NEUMANN (Annales de Dermatologie et de Syphiligraphie, vol. iv., 1893) reports the case of a man that had submitted to the preventive treatment of syphilis.

The chancre was excised and forty inunctions of Zittman's decoction given. Four months later a macular syphilide of peculiar form developed. The lesions were found on the chest and forearms, and were about the size of a silver dollar.

The patient was much emaciated; iritis and periostitis of both tibiæ were present.

Another case was treated in a similar way, and the same variety of eruption developed nine weeks later. Three years later the patient had several gummata on the posterior wall of the pharynx. In both cases from twenty-five to forty-one inunctions were given with a course of iodide of potassium; they have since remained entirely free from any other manifestations of the disease.

### THE VALUE OF WELANDER'S ABORTIVE TREATMENT OF BUBOES.

BROUSSE and BOTHEZAT (Annales de Dermatologie et de Syphiligraphie, vol. iv., 1893) state that Welander, assuming that buboes were the result of the presence of micro-organisms in the tissues, adopted the plan of injecting subcutaneously into the gland and periglandular tissue benzoate of mercury.

Benzoate of mercury, I gramme; Sodium chloride, .30 gramme; Water, 100 grammes.

One cubic centimetre of the above solution to be injected into the inflamed glands and a compress applied. The injections were followed by some swelling, but resorption took place in about three weeks. If the bubo is virulent the benzoate injection will not prevent its going on to suppuration.

If fluctuation be pronounced, the skin red and thinned, the injection is not altogether useless, as it will hasten the absorption of the infiltrate. In general, about fifty per cent. of the cases will require incision.

If fluctuation be marked, but the skin still remains thick and healthy, a solution of the benzoate should be injected. The abscess will generally undergo resolution without the necessity of an incision.

Loetnik has used Welander's method, and reports good results in eighty-seven per cent. of cases.

Generally a single injection suffices, but in some few cases as many as twelve have been made in eight days. In making the injections the skin should be rendered thoroughly antiseptic, and where the inflamed gland can be made out a half injection should be made at each pole of the gland. The parts should then be covered with a sublimate compress, and regular and even compress made with a rubber band.

Of ten cases treated by the author only one was successful, the remaining cases going on to suppuration and requiring incision.

The injections are followed by malaise, headache, nausea, and fever.

In conclusion, the author states that the injections are not of as much value as stated by Welander and Loetnik; and they are not with-

out some danger, as there is often excessive inflammatory reaction.

### THE COLLODION IODIDE IN THE TREAT-MENT OF SEBORRHŒA OF THE SCALP.

BUTTE (Annales de Dermatologie et de Syphiligraphie, vol. iv., 1893) has employed the collodion iodide for tinea of the scalp during the past four years with the best of results. In the achromate form of alopecia it is of great value, while in the decalvante form it is not better than the ordinary methods of treatment.

It is in ordinary tinea that the best results are obtained. It has, however, not been employed to the exclusion of other remedies.

The technique of the treatment is as follows: In all those cases in which epilation is thought necessary, the following is painted on all the patches with a piece of lint:

R Alcohol, ninety-five per cent., 12 grammes; Metallic iodine, .75 gramme. Allow to dissolve, and add to the same Collodion, 35 grammes; Venice turpentine, 1.5 grammes; Castor oil, 2 grammes.

The following formula may also be employed:

R. Alcohol, ninety-five per cent., Ether, of each, 5 grammes; Metallic iodine, .50 gramme; Collodion, 30 grammes.

Three or four days after the first application the mixture may be applied daily until the collodion becomes very thick, well adherent, and does not crack.

About the fifteenth day the edges of the collodion are separated and cut into sections with the scissors, and each section is torn off violently with the fingers. The part uncovered is washed with a solution of corrosive sublimate (1 to 500). Daily, or twice daily, applications of this parasiticide are to be made.

### THE TREATMENT OF UTERINE FIBRO-MATA WITH CHLORIDE OF ZINC.

CONDAMIN (Annales de Gynécologie et d'Obstétrique, vol. xxxix., 1893) is in the habit of using crayons of chloride of zinc in the treatment of those cases of uterine fibromata where the patients are too weak to stand operative interference.

After the cervix is dilated and the cavity of the uterus thoroughly disinfected, a crayon of chloride of zinc is introduced. The cervix is then tamponed, and the woman placed in bed, resting on her abdomen for several hours. On about the eighth or tenth day the slough separates. A second crayon should then be introduced in the same manner. There is but little constitutional reaction after these applications.

#### THE ELECTRICAL TREATMENT OF UTER-INE FIBROMATA.

BERGONIE and BOURSIER (Annales ae Gynécologie et d' Obstétrique, vol. xxxix., 1893) report
the results of their observations on the electrical treatment of two hundred cases of uterine
fibromata, the analysis of only one hundred
being considered.

The technique is as follows: The positive electrode is introduced into the uterus and the large abdominal electrode is connected with the negative pole.

A current of from twenty-five to one hundred and fifty milliampères is used for about ten minutes. The intrauterine electrode should be rendered thoroughly antiseptic with bichloride solution.

In fifty-four of the two hundred cases considered the fibromata were very large. Seven of these showed considerable atrophy to have taken place.

Ninety cases suffered greatly from hemorrhage; in eighty-one this symptom entirely disappeared.

Forty-one of the cases had great pain; twenty-two of these were relieved.

In sixty-three, where the general condition of the patient was seriously compromised, there was marked improvement in health.

# THE SUPERIORITY OF A LAPAROTOMY OVER VAGINAL HYSTERECTOMY IN CASES OF PELVIC SUPPURATION.

DELAGENIERE (Annales de Gynécologie et d'Obstétrique, vol. xxxix., 1893) says that laparotomy is superior to vaginal hysterectomy in cases of pelvic suppuration, because—

- 1. Laparotomy is not so grave an operation as hysterectomy.
- 2. The final results are as good in laparotomy as in hysterectomy.
- 3. The inconvenience of the abdominal cicatrice is much less important than the dangers of opening the bladder in hysterectomy.

In simple cases of pyosalpingitis the results are most excellent after laparotomy.

For the very complicated cases the hysterectomy is more suitable.

#### REPORT OF TWENTY CASES OF SYM-PHYSEOTOMY.

PINARD (Annales de Gynécologie et d'Obstétrique, vol. xxxix., 1893) reports twenty cases of symphyseotomy, with one death on the ninth day; child living.

A woman, aged thirty-one, pregnant for the fifth time, and the first four labors all terminated in the following manner:

The first labor terminated spontaneously, the child living. The second required the forceps, the child dead. The third and fourth labors terminated spontaneously, the children living. The fifth pregnancy progressed naturally to full term.

When she applied to the hospital for delivery, an examination showed that there was considerable contraction of the pelvis.

The occiput was inclined to rotate posteriorly.

The symphysis was divided in the usual manner, and the child rapidly delivered with the forceps.

The separation of the divided symphysis varied between 4.5 and 5.5 centimetres. The wound was dressed, and the uterine cavity washed out with a five-per-cent. carbolic solution.

On the following morning patient had a chill, and on examination of the genitals a liquid with a horrible odor was found escaping. The vagina was irrigated once more and tamponed with iodoform gauze.

The following day the lochia were still very fetid and the patient had high fever. An intrauterine injection of carbolized glycerin (five per cent.) was given and a fresh gauze tampon introduced.

The wound of the symphysis was examined, but nothing abnormal could be found.

On the following day, although the patient's general condition had somewhat improved, spasmodic contraction of some of the face muscles was noticed.

The patient complained as if something cracked in the old symphyseal wound. On examination it was found that the scar had opened for a few millimetres and was discharging a bloody, putrid pus.

A small drainage-tube was introduced and the wound carefully disinfected.

The temperature soon became very high, the patient delirious, and died the following day.

At the autopsy the edges of the abdominal wound were found everted. The pubic bones were found separated and connected with a large retro-pubic pocket.

There was no peritonitis, and the tubes and ovaries were healthy.

The retro-pubic pocket connected with two long lateral pockets filled with putrid pus.

Diagnosis of septicæmia was made as cause of death.

# THE CURATIVE EFFECT OF LAPAROTOMY IN TUBERCULOSIS OF THE PERITONEUM.

Bumm (Annales de Gynécologie et d'Obstétrique, vol. xxxix., 1893) reports the case of a woman, aged forty, no hereditary taints, suffering from peritoneal tuberculosis. Laparotomy was performed, and three quarts of fluid were drawn off. The peritoneum was covered with small and large white nodules. Some of these were cut away with scissors and others were removed with the sponge; iodoform was freely used, the abdomen was closed and surrounded with a binder. An examination of the nodules removed showed the typical appearances of young tubercle. Researches as to the presence of the tubercle bacilli were absolutely negative.

The patient was examined at the end of eight weeks, and a superficial tuberculosis found about one of the sutures. A sinus led to a collection of pus in the abdominal wall. In this abscess the bacilli were found in great numbers.

An injection of tuberculin was given, and was followed by high fever for four days. After the decline of the fever the encysted exudate was removed. The walls of the cavity were covered with white nodules. The patient finally recovered, and has remained free from any recurrence for a year and a half. The author suggests as a possible explanation of the influence of operation on the cure of these cases, that it causes an inflammatory exudate of round cells and a final transformation of the nodules into cicatricial tissue.

Fritsch claims that the cure is nothing more than the restoration of the normal circulation and consequent absorption.

### HERZFELD'S TECHNIQUE FOR TOTAL EXTIRPATION OF THE UTERUS.

CABOCHE (Annales de Gynteologie et d'Obstétrique, vol. xxxix., 1893), for this operation, places the patient on the left side, and a curved incision, convexity towards the left, is made, commencing at the posterior inferior iliac spine and running over to the middle of the sacral

t, then down the median line of that bone to

within one centimetre of the verge of the anus. The incision should include all the soft parts and expose the coccyx and the last two sacral vertebræ. The coccyx is removed, the sacral insertion of the two sciatic ligaments is next divided, and the resected inferior extremity of the sacrum is drawn out. The prevertebral fascia which presents is incised, and any small arteries that have been divided should be tied.

The right border of the rectum is then seen in the inferior portion of the wound and to the left side.

The advantage of this last manœuvre is that the vagina is easily found, the superior part of which is found deviating to the right, and is distinguished from the rectum by its brilliant white color.

The vagina is now separated from the rectum, and the finger should be introduced into the vagina to find the position of the cul-desac.

That part of the peritoneum that forms the pouch of Douglas is divided between forceps; the incision should be made to the right and not to the left, because of the rectum.

The finger is then introduced into the abdominal cavity, and the fundus with the adnexa brought into the wound.

Ligatures are passed through the broad ligaments on either side with a Deschamp's needle, and the separation of the uterus completed with a bistoury.

This being done, the peritoneum on the anterior surface of the uterus is incised, corresponding to the line of insertion of the peritoneum at this level.

The anterior part of the uterus is separated from the bladder. The uterine vessels are ligated high up before they bifurcate, which procedure renders the section of the vagina entirely bloodless.

The uterus now being removed, the vagina is closed by a Lembert suture.

The bone and soft parts are replaced and the funnel-shaped wound packed with iodoform gauze.

The author states that the vaginal method of total extirpation should be used in those cases where the uterus is not too large and the adnexa are perfectly movable.

### THE TRANSPLANTATION OF LARGE FLAPS OF SKIN.

KRAUS (Archiv für Klinische Chirurgie, vol. xlvi.) says, in former times, when, after extensive injuries to the limbs, considerable skin was lost, in order to cover this defect it was necessary to

REVIEWS.

employ the methods of Mass and Wagner, that is, it was necessary to take large skin-flaps with a pedicle from the rump for the arm, and for the leg and foot from the other leg.

te

d

Ť

Thiersch's grafts have never proved very satisfactory for large defects of the skin-surface.

In later years the author has been in the habit of making flaps from the entire thickness of the cutis and without a pedicle. With the proper amount of care the divided skin-flap will almost always unite.

The author has experimented upon twentyone cases and has made over one hundred skinflaps.

It makes but little difference as regards the size of the flap. Spindle-shaped flaps from twenty to twenty-five centimetres long and six or eight wide can be removed.

In employing these flaps it is necessary that they be thoroughly antiseptic, and all bleeding should be controlled by compression.

The foundation for the flaps must either be a fresh wound or, at least, one made so.

In granulating wounds the granulations should be removed with the sharp spoon. If corrosive sublimate solution has been used as an antiseptic, it must be entirely removed with sterilized salt solution, and the wound surface dried with sterilized gauze. The instruments and hands must also be dry.

It is much better in some granulating wounds to remove the granulations with the sharp knife, because if they have been of long standing the tissues are infiltrated and hard. If there be thickened bone under an ulcer it should be chiselled away.

That part of the body from which the skinflap is to be removed should be thoroughly disinfected, but this should not be done too energetically. The sublimate should be removed with sterilized salt solution and the skin carefully dried.

If the flap is to be taken from the arm, the anterior and inner surface should be selected.

For the anterior surface of the thigh the flap should be taken from the rump.

The flaps should all be more or less spindleshaped, as it permits of the wound made by their removal being easily sutured.

The cutis is quickly dissected from the subcutaneous fat, the knife always being made to cut at right angles to the flap.

The flap, once removed, is placed on the wound surface and quickly sutured in position.

The wound should be carefully covered with a light sterilized five-per-cent. iodoform mull and fastened with a light compress.

Where possible, the part should be kept quiet by means of a splint.

The dressing should be changed in three or four days, because of the blebs which are occasionally found in the flap. All these should be opened.

To avoid making tension on the flap, only the superficial layers of the dressing should be removed first; then the entire limb should be placed in a warm boracic-acid bath, when the rest of the dressing can be easily removed. In applying the second dressing the mull should be thickly covered with boracic vase-line

On the fourth day the flap looks pale or blue red and livid. On the seventh or eighth day the color is rose red, and on the fourteenth day this color is somewhat intensified.

Of the one hundred flaps made by the author only four became gangrenous.

In general from three to six weeks are required for the complete union of the flap; the sensibility returns very slowly.

PLASTIC OPERATIONS ON THE STUMP AFTER AMPUTATION OF THE LEG.

BLER (Archiv für Klinische Chirurgie, vol. xlvi.) has devised an operation for amputation of the leg that will enable the patient to bear his weight on the end of the stump.

After amputating the limb a wedge-shaped incision is made posteriorly and somewhat above the line of amputation.

The point of the wedge is removed, and when the ends of the bones are brought together the stump stands at right angles to the rest of the leg, and forms a kind of foot, upon which the patient can bear his weight.

After the bones and skin have been sutured together the stump is put in a Cramer's wire splint, which can be moulded to fit the limb.

Three successful cases are reported.

#### Reviews.

Notes on the Newer Remedies, their Therapeutic Applications and Modes of Administration. By David Cerna, M.D., Ph.D.

Philadelphia: W. B. Saunders.

The pages of this little book, as is indicated by the title, are devoted to the brief discussion of the many new remedies that have been introduced into medicine during the past few years, although the author has seen fit to also discuss a number of substances, such as quinine, amyl nitrite, carbon disulphide, which have been long in use by the medical profession. The various remedies are classified alphabetically, with a brief description, with their properties, therapeutic applications, and doses.

Several glucosides, notably adonidin and leptandrin, have been given the final e, which is the termination for alkaloids. Glucosides should terminate with in. Within the past few years so many synthetical compounds and animal products have been introduced that such a book as that compiled by Dr. Cerna cannot but be of considerable interest and value to the practitioner.

DISEASES OF THE URINARY APPARATUS. PHLEGMASIC AFFECTIONS. By John W. S. Gouley, M.D. New York: D. Appleton & Co., 1893.

The reputation of the author of this work is sufficient to insure it a cordial welcome by the medical profession and a careful study by the specialist. The first part of the book is devoted to general considerations covering the frequency of diseases of the urinary apparatus, with a sketch of the composition, innervation, nutrition, and function of the same; pathology, etiology, diagnosis, prophylaxis, and general therapeutics. The second section considers special diseases, such as nephritis, cystitis, prostatitis, urethritis, and retention of urine. The opening chapter traces the knowledge of the affections of the genital apparatus to a young savage, far back in the mists of time, harassed by the difficulties of micturition, or an aged savage in the throes of retention, finding relief by means of a hollow reed.

Throughout the work there is to be marked a certain cumbrous phraseology which to a student might be confusing. Moreover, there are classifications which confuse rather than make clear. Thus, taking at random the discussion of adenomata, we read that this class has two orders,—ectocœliac and entocœliac. The first order has four and the second order six genera, each generic name indicating the gland affected. Traumatic affections are characterized as "hurts caused by violence." Frequent urination is called sychnuresis; irrepressible urination, ascheturesis; difficult urination, dysuresis; painful urination, algeinuresis; involuntary urination, aconuresis. The name of chancsyphloid applied to the chancre is unfortunate and misleading. The chapter upon cystitis is probably the best in the book. treatment, however, is by no means fully discussed. The cystoscope is not mentioned. In

discussing gonorrhœa several pages are devoted to the historical consideration of the subject. The bacteriological researches prove conclusively the specific nature of the gonococcus. The author holds that nothing so far discovered has sufficed to explain the nature of contagion of those varieties of maladies miscalled gonorrhœa. He states that the mucous membranes which are most susceptible to venereal phlegmasia are the glans penis, the prepuce, the prostatic utricle, the urethral crypts, the anus, the mouth, and the conjunctiva, whilst the mucous membranes which are refractory are the prostatic ducts, the ejaculatory ducts, the seminal vesicles, the spermatic canals, the bladder, the rectum, the nose, and the lachrymal canals. These statements are not in accord with modern pathological teachings. Fournier is quoted as stating that seventyfive per cent. of all cases of urethritis are non-Masturbation is recorded as a contagious. frequent cause of urethritis. The operative treatment of urethritis is unhesitatingly condemned. No mention is made of the microscope as an aid in distinguishing between gonorrheal and non-gonorrheal urethritis. local treatment of the first stage of urethritis consists of two daily irrigations of the phallic region of the canal with a solution of mercuric chloride (1 to 10,000, or even 1 to 20,000). The quantity for each irrigation should not be less than a pint of water at a temperature of 102° to 105° F. The injection is made by means of a smooth, hollow bougie of gum or glass, not over four inches long, acorn-shaped at its vesical extremity, not larger than No. 10 English, with three or four perforations at the base of the acorn. It is stated that if the irrigations are well tolerated by the urethra, and if the urethral congestion is decreased in the course of two days, the treatment should be continued several more days to insure deliquescence of the phlegmasia. This injection treatment should only be applied when the patient is seen in the first stage of urethritis. If, when it comes under observation, the discharge, instead of being clear mucus, is already opaque, it indicates the presence of pus and the beginning of the second stage. In such a case the local treatment by irrigations should not be employed. During this stage balsamics and injections are worse than useless, and provocative of complications and consequences which not only retard the cure, but are in themselves of grave import. Not until the stage of decline is far advanced should urethral injections be used, and then only if after the use of the balsamics there is still a slight discharge.

Among the most efficient agents for urethral irrigation in these cases are the corrosive chloride of mercury (1 to 10,000) and the sulphate and chloride of zinc. Of a solution of sulphate of zinc, half a grain to a grain to the ounce of water, a pint is to be used at night or in the morning by a fountain syringe, in order that the whole urethra may be flushed out. The chloride of zinc should be employed in even weaker solutions than the sulphate,—from a quarter to half a grain to the ounce. Complications of urethritis are discussed at length. The treatment of gonorrheal rheumatism differs little, if at all, from that of acute or subacute rheumatism. Indeed, the author holds that this disease is perhaps ordinarily a subacute rheumatism, excited in a vulnerable subject by the genital phlegmasia, just as it might be excited by any other phlegmasia.

There is one statement in the treatment of chronic urethritis which requires an earnest protest at the hand of the reviewer. Gouley states that the idea to be impressed upon the minds of patients suffering from chronic urethral discharges are that these affections are not contagious, and that the frequently-reiterated assertion that a man who has once had virulent urethritis in his bachelor days, and marries years after the attack of urethritis, transmits the "gonorrhœal virus" to his wife, is without the slightest foundation.

There is probably no fact in medicine more clearly proved than that chronic urethral discharges often are contagious, and that the contagious properties may persist, though this is of course exceptional, for several years. A general acceptance of Gouley's dictum upon this subject would entail so much invalidism on the part of innocent women that it cannot be too vigorously combated.

There is an addendum upon retention of urine from prostatic obstruction in elderly men. The treatment laid down for this condition is most sound and valuable. Aside from the annoyance of constantly encountering words not in common use, and of finding some of the best and most reliable work of modern pathologists and bacteriologists slighted, it is only fair to state that this book is full of useful information derived from a peculiarly large personal experience.

CHOLERA. By G. Archie Stockwell, M.D., F.Z.T. Vols. I. and II.

Detroit, Mich.: George S. Davis, 1893.

Among the many accomplishments of Dr. Stockwell by no means the least is his ability to cull from medical literature interesting facts

and statements, and to so place them side by side that they prove interesting reading to his professional brethren. Doubtless the possibility of a cholera epidemic caused this indefatigable worker to prepare this useful little volume.

We are certain that nowhere in medicine can the reader obtain so much information for so small an amount, as each volume costs but twenty-five cents.

A TEXT-BOOK OF THE THEORY AND PRACTICE OF MEDI-CINE. By American teachers. Edited by William Pepper, M.D., LL.D. In two volumes. Illustrated. Vol. I.

Philadelphia: W. B. Saunders, 1893.

Thirteen authors well known to the medical public of the United States have contributed towards the compilation of this double-volume text-book, under the experienced editorial hand of Dr. Pepper. It is needless, therefore, to state that the book is a valuable contribution to medical literature, and with a work which necessarily commands so much respect, it is the place of the reviewer to point out some of its faults rather than to fill pages with praise of the various articles.

We do not think that the book is sufficiently concise and definite in its statements to form a valuable text-book for the ordinary medical student. It will rather find its place in the hands of the post-graduate student or the practitioner who has the time or desire to read complete articles concerning the various diseases which come to his view for treatment.

We are sorry that in the article upon "Hygiene". Dr. Billings has devoted so short a space to that most interesting subject of immunity, which just at present is engaging the professional mind.

Some of the articles, while thorough in some respects, are, nevertheless, evidently hurriedly written, and perhaps most of the book reminds one of the foot-note on page 653, in which the advice given, if followed, will certainly not do much towards improving the literary style of the American doctor, for it says, "Authors and other persons who compose as they write will find an extraordinary saving of nerve-force and time by the use of the short-hand amanuensis. The habit of dictation can by most persons be readily formed. It must be remembered, however, that the person will dictate as much in one hour as he will write in three, so that the dictation means more expenditure of brain-force in the same period of time than occurs in composing by writing. The author who dictates must work fewer hours a day, but

even then will accomplish more than he would with his own pen." This is certainly true of quantity, but hardly of quality.

In the advertisement of the book, which is bound in with the text, we are told that "the articles are not written as though addressed to students in lectures, but are exhaustive descriptions of diseases," and perhaps this is as clear and definite a statement of exactly what the work is as any other which could be made.

Most physicians already have upon their shelves similar works, which, of course, do not deal with medicine in its most recent phases, and these recent phases, when given with conscientious judgment, form the chief value of Volume I. We understand that the second volume will appear in the early fall.

### SOME PRACTICAL POINTS IN THE TREAT-MENT OF GRANULAR LIDS.

G. STERLING RYERSON (Ontario Medical Journal, May, 1893) writes as follows concerning the treatment of granular lids, the article being a continuation of the one previously noticed in the THERAPEUTIC GAZETTE:

The use of solid nitrate of silver is seldom required; such cases as demand its use are very serious ones, characterized by persistent atonic granulations. Sulphate of copper in solid crystal is also an excellent stimulant and astringent in just such cases. Its effect is diminished or increased in proportion as it is washed off after application. The crystal should be rubbed smooth on a grindstone before using. The pain of the reaction after its use can be diminished by instilling a few drops of cocaine before use and free bathing with cold water after. The mitigated stick (nitrate of silver 1 part, nitrate of potassium 2 parts) is also applicable to this same class of Scarification by electrolytic knives, after the method of Johnson, is coming into fashion; but it must be said that the method is still sub judice and its results doubtful.

Of the sequelæ, or more properly the concurrent affections, pannus is by far the most serious. The treatment in most cases is simply the treatment of the granulations. Best cases are fairly plentiful, in which the corneal opacity is most obstinate, and in which permanent impairment of vision is threatened. The remedy par excellence for this condition is jequirity. One bean macerated in half an ounce of water was the standard strength, but later experiment has shown that powdered bean is the most efficacious. If properly kept in a glass-stoppered bottle, it will keep for a long time.

Dr. Ryerson has some that he has had for five years, and it is still quite as good and active as when first obtained. In suitable cases a little is dusted on the conjunctiva. Great caution should be used to apply very little at first. Within six hours the eye begins to pain, the conjunctiva and lids to swell, and in twenty hours a thin pellucid or grayish pseudo-membrane is formed. The discharge from the eye is increased. There is heat and the heightened sensibility to light. If it is desired to stir up the eye still further, a little more jequirity powder is insufflated next day. Usually two doses accomplish all that is required.

It is best to allow the inflammatory reaction to have its own way for two or three days; after that it can be checked by warm boric acid lotions. After a week nitrate of silver solutions may be used. In some cases this process of cooling down may have to be repeated two or three times. He has never yet met with a case in which very material benefit did not result, even in old and apparently hopeless cases.

He gives a word of caution: Don't use jequirity except in very old and obstinate cases, in which the cornea is a good deal affected. He saw a case in New York some years ago in which, from its use, both corneæ sloughed.

In conclusion, he says, granular ophthalmia is easily cured at the outset, but it too often happens that patients underestimate its importance, and neglect or deliberately disregard warnings until the disease becomes fixed. He has under his care at the present time a case in which the granular process is quite active, eighteen years after the first neglected attack; therefore we cannot be too careful to forewarn patients of the future which awaits the negligent.

### PERIORBITAL INCISION IN GLAUCOMA.

Dr. G. Sous (Journal de Médecine de Bordeaux, May 7, 1893), referring to the operation of elongation of the nasal nerve in the treatment of glaucoma, resolved to try the effect of a periorbital wound, but in a region where the nasal nerve could not be affected. Therefore in a suitable case he made an incision parallel to the orbital edge one centimetre in length and half a centimetre in depth. There was a small escape of blood, and then the wound was sutured. He thinks the facts are too few to allow explanation of the method of action of a section on a level with the end of the eyebrow, a section, moreover, which affects only the branches of the lachrymal nerve and causes only a slight escape of blood. Two of his ob-

servations refer to glaucoma, and were successful rather from the point of view of relieving the sufferings of the patient than of the improvement in sight. In a third case, where an enucleation will probably be indispensable sooner or later, the operation produced the result which might have been expected,-it relieved pain and restored calm: neither more nor less was required. For the present Dr. Sous very wisely concludes to give the facts to the public without comment. Whether his hope that facts to be elicited by greater exexperience with this operation will materialize remains to be seen. It seems likely from his communication that the hope of placing this operation among well-recognized surgical procedures for the relief of glaucoma will not be realized.

### Correspondence.

#### BERLIN.

(From an Occasional Correspondent.)

Berlin surgeons are divided in their opinions regarding the relative merits of asepsis and antisepsis. Professor von Bergman and Dr. Israel are the most consistent advocates of asepsis and the "dry" method of operating, while Professors Bardeleben and Olshausen still use the antiseptic methods, keeping all their instruments. sponges, and gauze compresses in 2.5 per cent. carbolic solution. The other surgeons steamsterilize everything. They use small pieces of gauze, about one foot square, as sponges, and keep instruments in sterile or soda water. In their operations they are very particular about the loss of blood. Each vessel is secured by a hæmostat as soon as cut, and all are ligated before proceeding with a subsequent step in the operation. They claim that the loss of blood and the use of sublimate and carbolic acid in the wound explains the frequent occurrence of shock, of which they hear so much from Americans. Whatever may be the cause, they certainly have but few cases of shock, without taking special precautions against its occurrence. In preparing patients for an operation they are stripped, scrubbed, and soaked in sublimate, then covered with but a sheet, in even the severest cases. More frequently are the battery and artificial respiration called for in chloroform narcosis than the use of external heat or hypodermics in shock. Patients are prepared for operation in the usual way. region of operation is thoroughly scrubbed with soap, water, and brush, then with alcohol or ether, and finally with a 1 to 1000 sublimate solution; but I have seen no cases prepared before the hour of operation, this duty usually being performed while the patient is being narcotized.

Catgut is generally used for internal suturing and ligations, while silk is reserved for the skin. Iodoform and sterile gauze and sterilized moss constitute the dressings. Catgut is prepared by soaking for twenty-four hours in ether, and is then placed in either a 1 to 1000 alcoholic sublimate solution or in a mixture of iodoform one part, ether two parts, and alcohol eight parts.

Injections of iodoform and glycerin in various proportions are used in nearly all the hospitals in cases of tubercular arthritis. Dr. Hahn, at the City Hospital, uses a twenty-five-per-cent. solution, and in a series of about two hundred cases has had very satisfactory results.

Professor Bardeleben uses a six-per-cent. solution at the Charité Hospital, and finds the recoveries reach scarcely five per cent., while in twenty-five cases of tubercular arthritis in the past two months at the University Hospital, Professor von Bergman has had to resort to the knife in but five. It may be worth mentioning that Dr. Israel, after giving it a fair trial at the Jewish Hospital, says he never saw a case cured by the process, and in only a few cases did he note improvement.

In a series of six cases of carcinomatous rectum, occurring this summer at the Charité Hospital, Professor Bardeleben has performed left inguinal colotomy in each case without a single death. He secures the colon to the opening in the abdominal wall by a few silk sutures, and two days afterwards opens the intestine. The artificial anus thus formed is kept patulous by means of a full-sized rectal bougie.

Dr. Israel has operated upon the kidney over eighty times. Out of twelve cases of malignant disease, in which the kidney was removed, two died from the operation; three died subsequently of what he calls collapse. Of the remaining seven, all are living, the first operation occurring six and a half years ago. Out of thirty-five cases in which the kidney was operated upon for various causes, chiefly stone, in which the kidney was not removed, he has had six deaths; and the total mortality of all his cases, excluding the twelve malignant cases, is nine per cent.

In a series of sixty-five cases of typhlitis, Professor Sonnenburg operated in forty cases of primary perforation without a single death, while in the remaining twenty-five cases operated upon after general peritonitis had set in, but five recovered. The same surgeon, following the plan proposed by Dr. Myer, has filled the diseased bone-cavities of two patients with an amalgam filling, composed of copper and mercury, which has a continuous antiseptic action. Sufficient time has not yet elapsed for judgment to be passed upon this procedure.

I have lately seen two operations for the cure of inguinal hernia not usually described in our text-books.

Professor Bardeleben prefers the following: After freeing the sac from all adhesions and reducing the hernia, the sac is split into two wings, whose attachments are respectively the inner and outer pillars of the external ring. These two parallelograms of tissue are then rolled into scrolls, which, when tightly compressed, rest against their respective pillars and occlude the opening, in which position they are sewed. At the same time the pillars are united, and in this way act as a plug to the external ring. The cutaneous wound is then closed by a few stitches, the intervening spaces being packed with iodoform gauze and allowed to heal by granulation.

The second plan has twice been performed by Dr. Israel, following the plan proposed by Kocher, of Berne. After completely freeing the sac and reducing the hernia, the sac is tightly twisted into a cord and ligated as close to the external ring as possible. At this juncture an incision is made through the external oblique muscle directly over the internal abdominal ring. The twisted sac is then forced through the inguinal canal and drawn through the new opening, where it is again ligated at a lower point and subsequently sutured. It is then either cut away or laid down in the direction of the canal and sutured there, acting as a tampon to strengthen the wall. The external ring is then closed by deep sutures and the skin closed over the whole, union by first intention being sought for.

This last method is only proposed for those cases of oblique inguinal hernia in which the canal has not been obliterated by the dragging down of the internal ring by a long-standing or very large hernia. All fractures are put up in plaster or silicate of sodium casts. If there is much contusion, the formation of large blebs, or extensive swelling on admission, the wounded member is temporarily dressed until the following day, when the limb is put up permanently. Very frequently the patient is allowed to go about the ward on the following day. Whether this accounts for the very bad

results one constantly meets with, I am unable to state.

CLINICAL NOTE ON COCILLAÑA.

To the Editors of the THERAPEUTIC GAZETTE:

DEAR SIRS:—Through the courtesy of Messrs. Parke, Davis & Co., of New York, I have been supplied with a quantity of the fluid extract of cocillana, with a request that I should investigate its therapeutical properties.

The drug was introduced in 1886 by Professor Rusby, of New York, from Bolivia, where the natives used it purely for its emesic properties. Dr. Rusby considers its physiological action similar to that of emetine, and that it is excreted by the mucous membrane of the respiratory tract, exciting the glands to excessive action, which continues for a time and then leaves them in a state of sedation, and that its chief value would be found in cases of croup. bronchitis, and pneumonia. It is in these diseases that I have thought fit to use the preparation. In the limited number of cases of croup in which I have used the drug I have not been satisfied of its utility, but probably this was due to my temerity in pushing the drug as I should have done ipecacuanha. In many cases of capillary bronchitis, catarrhal and bronchopneumonia not infrequently limited to one lobe, occurring in a severe epidemic of measles, I found it useful; also in the first stage or dryness and stuffiness of acute bronchitis, both of children and adults, the cough becoming looser and the sputum more abundant. In the hard, dry cough of bronchitis the liquid extract may be advantageously combined with carbonate of ammonia and squills.

It no doubt stimulates the respiratory centre and acts as a sedative expectorant. In its action as a bronchial antispasmodic, while momentarily increasing the spasm, it causes a profuse and rapid flow of mucus from the bronchial tubes, thus relieving the tension of the vessels and causing reflex cough, and in this manner increased secretion and expulsion.

Its special action upon the heart will probably be found to be as a direct depressant of the cardiac centre and nervo-muscular apparatus.

That the drug is a useful one I think further research will prove. The true value of a new therapeutic agent can only be determined by its frequent use by many investigators before it can be accepted to occupy its proper place in the materia medica.

I. FLETCHER HORNE, M.D., D.Sc., F.R.C.S.E.

BARNSLEY, ENGLAND.

# Therapeutic Gazette.

Whole Series, Vol. XVII. DETROIT, MICH., PA., September 15, 1893.

Third Series, Vol. IX. No. 9.

#### CONTENTS.

#### Original Communications.

On the Treatment of some Forms of Advanced Cancer of the Uterus. By Frederic Bowreman Jessett, F.R.C.S. 577 Some Results of a Bacteriological Examination of the Pipettes and Collyria taken from a Treatment Case used in Ophthalmic Practice, with the Effects of Inoculations. By G. E. de Schweinitz, M.D., and E. A. de Schweinitz, Ph.D. Some Points in the Surgical Treatment of Simple Ulcer of the Stomach. By William F. Haslam. 588 A Paper introductory to the Discussion on the Radical Cure of Hernia. By Rushton Parker, M.B., B.S., F.R.C.S. 592 The Cool-Bath Treatment of Enteric Fever. By C. Stennett Redmond, L.R.C.P.I. 595 On the Use of Pilocarpine in Aural Affections. By G. Metcalfe, M.B., B.S., etc. 595 Colerance to Nitro-Glycerin easily acquired. Limitations of Use of the Drug in Chronic Nephritis. By D. D. Stewart, M.D. 604 The Nature of Vaccine Immunity. By S. P. Kramer, M.D., and Rubert Boyce, M.B., M.R.C.S. 666

#### Leading Articles.

Antisepsis in Ophthalmic Surgery Some Facts in regard to the Administra-	608
tion of Iron	609
Parenchymatous Injections in Acute In- flammatory Affections of the Tonsils	610

#### Reports on Therapeutic Progress.

The Treatment of Certain Forms of	600
Fracture. The Treatment of Vulvar Vegetations by Pure Carbolic Acid. The Therapeutic Value of Chloride of	607
Methyl	6

	AGE
The Treatment and Cure of Lepra Tu-	
berosa with Europhen The Treatment of Constipation and some	612
The Treatment of Constipation and some	
Affections of the Bowels with Large	
Enemas of Oil	612
nosis and Treatment of Round Ulcer of	
the Stomach	6
The Dangers and Avoidance of Front	613
the Stomach The Dangers and Avoidance of Ergot in Obstetrics The Internal Use of Hot Water in the Treatment of Disease in Infants	614
The Internal Use of Hot Water in the	U-4
Treatment of Disease in Infants	6z4
The Employment of Iodoform in Ab- dominal Operations	
dominal Operations	615
The Use of Antispasmine	6x6
Steresol	616
Subcutaneous Injections of Salol in the	_
Treatment of Tuberculosis	617
On a New Therapeutic Method, con- sisting in the Use of Organic Liquids	
extracted from Glands and other Or-	
	٤
gans Ansesthetics in Labor	617 618
The Comparative Actions of Evalgin and	OIO
Antipyrin in the Treatment of Mental	
Derangements	618
The Action of Phenocoll Hydrochlorate	
in Malaria	6 <b>18</b>
in Malaria	619
Observations on the Nature and Treat-	
ment of Angina Pectoris	619
Cascarine	623
Soya Beans for Diabetes	623
Asepsis in Operations performed on the	
Cascarine	623
On the Treatment of Gray Atrophy of	625
the Optic Nerve	025
caused by the Toxic Action of Iodo-	
form in a Case of Burn	625
form in a Case of Burn  The Employment of Instillations of Sulphate of Quinine in the Treatment of	,
phate of Ouinine in the Treatment of	
Ulcerated Keratitis	625
The Treatment of Strabismus	626
The Extraction of Cataract without Iri-	_
dectomy: Its Advantages and Dangers	627 628
dectomy: Its Advantages and Dangers Palpebral Eczema Removal of the Lachrymal Glands	638
Kemoval of the Lachrymal Glands	628
Statistics of Operations, with Remarks Asepsis in the Ophthalmic Department	039
A the Wileshum University	6~
of the Wilrzburg University What Benefit can Ear Patients derive	630
from Ness Treatment?	62*
The Treatment of Sensitive Spines The Hæmostatic Properties of Puff-Ball	632
The Hæmostatic Properties of Puff-Ball	633
•	٥.,

8	P	AGE
	The Strongly Counter-Irritant Effects of	
9	the Usual Mastoid Operation	634
	A New Suggestion as to the Surgical	
	Treatment of Hemorrholds	634
2	Antiseptic Varnish—Steresol	635
	A Method of applying Pressure to the	
	Seat of a Fracture for the Purpose of	
3	bringing the Bony Fragments into Ac- curate Apposition and retaining them	
. 1	curate Apposition and retaining them	
4	there until Consolidation has taken	
. 1	place	635
4	with Strangulated Hernia?	6
- 1	Intestinal Anastomosis by a New Mathod	233
5	Intestinal Anastomosis by a New Method The Restoration of Symphyseotomy	733
6	Cancer and its Treatment	627
٠ ا	The Treatment of Tetanus	627
7	The Treatment of Tetanus Immediate Union after Division of Aral	-3,
1	Fistula	637
- 1	Fistula	637
Į	Diagnostic and Therapeutic Value of	•
7	Puncture of the Spinal Canal, accord-	
8	ing to the Method of Quincke	638
- 1	Operative Treatment of Luxations of the	
_	Elbow	638
8	Two Cases of Cut-Throat treated by	
_	Tracheotomy and Immediate Suture Some Points of Practical Importance in	639
В	Some Points of Practical Importance in	e
9	the Use of Curved Skin Incisions The Treatment of Stricture of the Urethra	639
.	he Flectricity	6-0
9	by Electricity	639
3	of Igints by the Induction of Local	
•	Œdema	640
3	Ædema	-4-
٠,	Section	640
5	Treatment of Gonorrhoea in Women	641
1	Antisepsis in Urethral Surgery	64x
1	Tuberculosis of the Prostate	642
5		
	Reviews	642
5		
0		
_	Correspondence.	
78	201125	
8	London Letter	644
9	London Letter	648
7	Totale Internatives in Bye-Australia	-40
-		

#### Notes and Oueries.

A Warning to the Readers of our Journals 648

#### Original Communications.

ON THE TREATMENT OF SOME FORMS OF ADVANCED CANCER OF THE UTERUS.

READ AT THE MEETING OF THE BRITISH MEDICAL ASSOCIATION, AUGUST, 1893. OBSTETRIC AND GYNÆCOLOGICAL SECTION.

By Frederic Bowreman Jessett, F.R.C.S., Surgeon to the Cancer Hospital, Brompton.

THE treatment of advanced carcinoma of the uterus is a subject which has occupied the minds of all physicians and surgeons who have had their attention drawn to it from time immemorial, and it is one with which, from an extensive experience at the Cancer Hospital, I have endeavored for some years to cope.

In these advanced days of gynæcological art we are enabled to treat, by removal, the diseased uterus or the affected part of the organ, with tolerable precision and with marked success, but when the disease has extended deeply into the tissues surrounding the neck of the uterus, and the uterus itself, it is then that our art fails us and we have been in the habit of allowing such cases to drift onward until death steps in and releases the patient from further pain and suffering. It is to the treatment of these cases that I wish to draw your attention in this paper.

I have tried numerous forms of treatment in these cases that have been suggested and practised by other surgeons, but one after the other I have ceased to adopt them, as in none did any good result, and in many the disease seemed to be stimulated to increase with greater rapidity than if left alone.

It was with feelings of despair that I entered my uterine ward, feeling that all I could do was to alleviate the sufferings of some of the poor women who occupied the beds, but as to any further aid I felt I was utterly powerless to assist them.

Of late, however, a new era seems to have opened up, and I now undertake the freatment of many of these cases with full hope and expectation of, in some instances, eradicating the disease, and in others of considerably retarding it, and in all, of giving immense relief from pain and an improvement in general health.

In adopting the treatment I am about to describe, I was in the first instance struck by the fact that in many of the most advanced cases of uterine cancer which died the body of the uterus was often apparently free from disease. The disease appeared to have commenced in the cervical canal and then extended downward to the external os, and then eaten its way through the cervix and extended laterally into the cellular tissues surrounding it, and from thence along the broad ligaments.

Now, if the disease were attacked before it extended along the broad ligaments and before the bladder or rectum was affected, I thought I saw my way to cope with it. In the first place the thorough curetting away of all the soft diseased tissues was imperative. Then to find some form of caustic and method of applying it to the cavity caused by the removal of the disease so as to burn deeply into the surrounding tissues into which the disease might have invaded.

With respect to the curetting, I found the curettes by themselves were ill adapted to the purpose, as they removed the diseased tissues unevenly. I next turned my attention to Bell's dredgers, but found these did not fulfil all I wished, as they were too pliable and their calibre was too small. The idea then occurred to me if I could have an instrument constructed somewhat after the principle of Bell's dredger, that I could increase the size of by means of a screw in the handle, and furnished with watch-spring knives so shaped as to enable me to scrape out the contents of the uterus by simple rotations, I should have made a considerable advance, and should be able to accomplish all I required. Such an instrument was made for me by Messrs. Maw, Son & Thompson, and, as you will see, is worked by means of the screw at the end of the handle. By means of this screw the blades, which when first introduced lie flat on the central rod, are made gradually to expand until they represent an area of about one and a half inches in diameter. Here, then, I was furnished with an instrument by means of which I was enabled to remove the whole contents of the uterus with comparative ease, and, as the blades are not too sharp, no mischief can be done with them, and very little bleeding follows its use.

The next question which arose was the form of caustic and the method of its application. And here I followed in the steps of Drs. Marion Sims and Heywood Smith. To the latter gentleman I am indebted for drawing my attention to it, and I adopted the use of absorbent wool soaked in a saturated solution of chloride of zinc. The caustic applied in this form had the advantage of being readily packed. Before packing the uterus all bleeding must be arrested, as it is essential that the raw surfaces should be fairly dry before applying the caustic. The best method of arresting the hemorrhage is to apply locally sponges wrung out in very hot water, or, failing this, apply a sponge which has been soaked in tincture of matico. When the oozing has been sufficiently arrested the chloride of zinc wool is packed firmly in small pieces, being careful to see that it is packed well into the fundus so as to completely and firmly fill the cavity. A dry wool tampon is next applied to the opening into the vagina, and lastly the vagina is packed with tampons soaked in a strong solution of soda. These tampons can be removed the day following the operation, but the chloride of zinc packing must not be removed for at least five days. This wool is most conveniently removed by Marion Sims's screw, which is a long straight iron rod with a very fine double screw at the top. The vagina and uterus must be kept constantly syringed out with some antiseptic solution, preferably either solution of iodine or carbolic acid, through a full sized Fergusson's speculum.

As a rule, the slough caused by the caustic comes away in about ten days or a fortnight, when a healthy granulating surface is left. Should there be any suspicious spot, it will be well to pack the cavity again. This can be readily done without an anæsthetic through a full-sized Fergusson's speculum.

All the cases were treated with arsenic bromide,  $\frac{1}{40}$  grain of which was administered

three times a day, after meals. I have every reason to be satisfied with this treatment.

The following eight cases, all of which were markedly benefited by the treatment, will illustrate the usefulness of this method.

CASE I.—Mrs. S., aged seventy, consulted me February 3, 1892, suffering from carcinoma of the cervix uteri.

I performed supra-vaginal amputation of the os and cervix. The patient made an excellent recovery. In November of the same year, there being some bleeding from the uterus, I examined her and found recurrence of the disease extending into the uterine cavity. The patient suffered much pain and discomfort. Considering the age of the patient, I did not think removal of the entire uterus justifiable. Moreover, the uterus was somewhat fixed by the extension of the disease. I therefore, with the assistance of Dr. Heywood Smith, thoroughly scraped and dredged the uterine cavity, and then packed it with chloride of zinc wool, as above described. At the end of a fortnight I removed a thick slough, which represented a cast of the inside of the organ. The uterus and vagina were kept constantly syringed out three times a day with a solution of carbolic acid. The patient made an excellent recovery, and had no local return of the disease. She, however, died in May, 1893, from secondary growths in the liver and

The following cases, for the notes of which I am indebted to Mr. West, the house surgeon, have been treated in the Cancer Hospital during the last year.

CASE II.—Rebecca H., aged thirty-three, married, six children, one miscarriage, admitted into Burdett-Coutts Ward on January 4, 1893, complaining of pain in the back and left iliac region, and of discharge from vagina, which patient has noticed for the last ten months.

Menstruation has been irregular during that period, severe floodings alternating with amenorrhœa; has lost much flesh.

Present Condition.—There is a mushroomshaped soft growth in the situation of the vaginal portion of the cervix, which has ulcerated. The growth extends on to the posterior vaginal wall. The uterus is somewhat fixed.

On January 24, under ether, all the soft part of the growth was scraped away with the dredger, and the whole of the interior of the uterus was also scraped, which left a craterlike cavity. The cavity was then plugged with dry wool, which had previously been soaked in a saturated solution of zinc chloride and allowed to dry. A dry tampon of wool with a string tied to it was then passed, and the vagina was filled with plugs squeezed out of a strong solution of carbonate of soda.

The patient had very little pain after the application of the caustic.

January 25.—All the vaginal tampons removed except one, and the vagina well douched out three times a day.

January 27.—The zinc chloride wool removed from the uterine cavity. The uterus well douched out through a Fergusson's speculum.

January 28.—Much offensive discharge; otherwise patient experiences little discomfort. Temperature 99.8° F. Vagina well syringed out through a Fergusson's speculum three times a day with 1 to 40 carbolic.

January 30.—A whitish slough came away from the vagina, being a cast of the ulcerated cavity.

February 1.—Patient much better; no discharge to speak of; and states she suffers no pain. On vaginal examination, the cavity feels soft and healthy.

February 19.—Patient discharged; feels much better in her general health; no pain or discharge to speak of.

August 2.—She has reported herself from time to time, and still keeps in good health.

There is a firm cicatrix at seat of cauterization. No discharge.

CASE III.—Emma B., aged thirty-seven, married, eight children, one miscarriage two years ago, admitted in Burdett-Coutts ward March 18, 1893, complains of offensive discharge, sometimes blood-stained, and of pains in the back and of shooting pain down the left leg as far as the knee. Patient first noticed the discharge a year ago; she was then seven months pregnant. She has lost much flesh. There is no family history of cancer obtainable. Patient was ordered morphia 3/6 grain three times a day, as pain was very severe.

Present Condition.—A large crater-like cavity in the situation of external os, easily admitting the tip of the finger. The growth has extended to the vaginal walls; uterus much less movable than normal.

April 8, 1893.—Under ether the growth and the whole of interior of the uterus was scraped with the dredger. The cavity thus left was then packed with chloride of zinc wool. The vagina was then plugged with tampons of wool which had been squeezed out of a strong solution of bicarbonate of soda.

April 10.—Patient unfortunately contracted cystitis, as vaginal tampons were left in by mistake too long, and which were pressing on the bladder.

Vaginal plugs removed. Vagina well syringed out through Fergusson's speculum. Dry vaginal tampons placed in vagina.

April 11.—Cystitis much better. Vaginal plugs removed, and vagina well syringed out through a Fergusson's speculum three times daily.

April 12.—Chloride of zinc wool removed from the uterus, well douched with 1 to 40 carbolic.

April 13.—Much offensive discharge, and slough.

April 18.—No discharge or pain to speak of. Patient expresses herself much better.

April 19.—Uterus again plugged with wool soaked in chloride of zinc. Vagina packed with tampons squeezed out of a strong bicarbonate of soda solution.

April 21.—Chloride of zinc wool removed.

April 22.—Much offensive discharge and slough.

May 21.—Uterus again plugged as before, which plugs were removed on May 23.

June 1.—Patient discharged; has no pain or discharge to speak of, feels much stronger, and expresses herself as quite well.

August 3.—Still continues well and free from pain or discharge.

CASE IV.—Annie G., aged forty-five, admitted into Burdett-Coutts Ward on April 1, 1893, suffering from advanced carcinoma of the cervix.

Family History.—No family history of cancer.

Patient has had seven children and five miscarriages; patient had a miscarriage two years ago; has had vaginal discharge ever since, and pain in the back which has got much worse of late.

Present Condition.—Patient is a very anæmic and emaciated woman. In the situation of external os is a large ulcer admitting the tip of the forefinger. The posterior vaginal wall is infiltrated with the growth. Uterus much less movable than normal. Complains much of pain.

April 11.—The soft part of the growth was scraped away with the dredger, and the whole of the uterine cavity was also scraped. The cavity was then packed with chloride of zinc wool. Vagina was packed with wool squeezed out of a strong solution of bicarbonate of soda.

April 12.—Patient experienced little pain after coming to from the anæsthetic; slept

fairly well without morphia; urine was drawn off by catheter every six hours. Vaginal tampons were removed, vagina well syringed out with 1 to 40 carbolic. A single dry tampon replaced in vagina.

April 14.—Vagina syringed out three times a day. Patient eats and sleeps well; little pain; temperature at night 100° F.

April 15.—Chloride of zinc wool removed from uterine cavity. Uterus well syringed out through a Fergusson's speculum.

April 19.—Some sloughs came away in the vaginal discharge.

April 21.—Discharge almost ceased.

April 24.—Uterus again packed with zinc chloride wool without an anæsthetic.

April 26.—Zinc chloride wool removed. Well syringed out three times a day.

May 1.—Large slough came away in vaginal discharges.

May 8.—Uterus was again packed with zinc chloride wool.

May 10.—Plugs removed. Uterine cavity well syringed out with 1 to 40 carbolic four times a day.

May 14.—Sloughs came away in vaginal discharges.

May 23.—Patient now has no pain or discharge; on vaginal examination the cavity left by the scraping and caustic is felt to be soft; no new growth felt. Patient expresses herself as feeling quite well; discharged.

August 2.—Quite free from pain or discharge, and is able to follow her ordinary vocation in life.

CASE V.—Harriet M., age 46, admitted into Burdett-Coutts Ward May 18, 1893, suffering from advanced uterine cancer.

History.—Patient has had vaginal discharge for the last twelve months. For the last ten months discharge has been offensive, and patient has had most severe pain in the back and hypogastric region. Has had increased frequency of micturition for the last two months, and pain on passing it.

Family History.—No history of cancer obtainable.

Past History.—Patient has had three children, the youngest twenty-three years ago; always regular till two years ago; has seen nothing since; has had no serious illnesses.

Present Condition.—A well nourished, fairly strong-looking woman, not anæmic.

On vaginal examination is felt a large mass of growth in the position of the cervix. The growth has ulcerated in the centre. The anterior vaginal wall is much involved, also the left broad ligament.

May 21.—Under ether, the growth was scraped and the interior of the uterus was cleaned out with the dredger. The cavity was packed with chloride of zinc wool. Vagina packed with wool wrung out of a strong solution of bicarbonate of soda.

May 23.—Uterine plugs removed, cavity well syringed out with 1 to 40 carbolic.

May 24.—Much offensive discharge. Patient has still increased frequency of micturition, urine alkaline; blood-stained bladder washed out with solution of quinine.

May 25.—Large sloughs came away; urine still alkaline, and blood-stained. Again washed out with solution of quinine.

May 28.—No improvement of bladder symptoms; evidently patient has malignant growth of bladder.

June 1.—No vaginal discharge; much pain on micturition; much blood in urine.

June 15.—Bladder symptoms still continue in spite of treatment. No vaginal discharge.

June 30.—Patient discharged; much blood in urine still. Scarcely any discharge per vaginam.

CASE VI.—Ann W., age 48, admitted into Burdett-Coutts Ward at the Cancer Hospital suffering from advanced carcinoma of the cervix, May 22, 1893.

History.—Patient has had vaginal discharge for the last eight months, which has latterly become very offensive and sometimes bloodstained; has had severe pain in the back and in left iliac region for the last two months, which is relieved by large doses of morphia. No family history of cancer.

Patient has had eight children and one miscarriage.

Present Condition.—Patient is a poorly-nourished, anæmic woman.

Advanced carcinoma of cervix; the growth has infiltrated the posterior wall. Bimanually, uterus is much less movable than normal.

May 24.—Under ether, the growth was scraped away with the dredger as far as possible; also the whole of uterine cavity. The cavity was plugged with chloride of zinc wool. The vagina was packed with wool wrung out of a strong solution of bicarbonate of soda.

May 26.—Plugs removed from uterine cavity; uterus syringed out three times daily.

May 27.—Much offensive discharge.

May 30.—Sloughs came away in vaginal discharges.

June 4.—A small nodule of growth felt on the edge of the cavity, which was left after the scraping. Some crystals of chromic acid applied to the nodule. Vagina was packed with wool wrung out of a strong bicarbonate of soda solution.

June 5.—Patient had much pain after the caustic was applied; had a hypodermic injection of morphia.

June 6.—Vaginal plugs removed. Uterus well syringed out.

June 7.—A good deal of offensive discharge.

June 10.—No pain or discharge. Patient feels quite well again; discharged.

CASE VII.—Maria T., aged sixty four, admitted June 1, 1893, into Burdett-Coutts Ward, suffering from advanced carcinoma of the cervix.

Patient has had one child, thirty-nine years ago; has had five or six miscarriages.

No family history of cancer; strong family history of consumption.

For the last three or four months patient has had much offensive watery discharge, which is sometimes blood-stained; has very severe pain in the back and in the hypogastric region.

Present Condition.—Poorly-nourished woman; cervix infiltrated with growth which has ulcerated in the centre. Uterus much less movable than normal. The left broad ligament appears involved in the growth. The anterior vaginal wall is free from the growth. The posterior wall is slightly involved.

June 6.—Under ether, growth scraped away with the dredger; also the uterine cavity. The cavity plugged with chloride of zinc wool. Vagina packed with wool wrung out of a strong solution of bicarbonate of soda.

June 7.—Vaginal plugs removed. Vagina well syringed out with 1 to 40 carbolic.

June 9.—Chloride of zinc wool removed. Well syringed, three times a day, through a Fergusson's speculum.

June 12.—A large slough came away in vaginal discharges.

June 28.—Uterus again packed with zinc chloride wool.

July 1.—Plugs removed. Vagina well syringed out.

July 5.—Sloughs came away. Vagina well douched night and morning.

July 13.—Patient has no pain or discharge. No growth felt on vaginal examination. Feels well. Discharged.

CASE VIII.—Mary M., aged thirty-eight, married, has twelve children; the youngest child is eighteen months old; admitted into Burdett-Coutts ward suffering from advanced uterine cancer on July 10, 1893.

History from Patient.—Patient was quite well till November, 1892. Has lost blood continuously since that date. Ten weeks ago had a miscarriage; about a three-months' feetus.

Past History.—Has always been healthy till this illness. Has lived in the country all her life.

Family History.—Mother died of cancer of the uterus, aged forty-nine.

Present Condition.—Patient is a very stout woman, somewhat anæmic-looking. On vaginal examination is felt, in the situation of external os, an ulcer admitting the tip of the forefinger, the posterior vaginal wall is infiltrated with cancer. The left broad ligament is fixed. Uterus much less movable than normal.

June 17.—Patient was placed under the influence of gas followed by ether. As much of the growth as possible was scraped away with the dredger. The dredger was also applied to the interior of the uterus, which was well scraped. The whole cavity thus made was packed with zinc-chloride wool. The vagina was then packed with tampons of wool wrung out of a strong bicarbonate of soda solution.

June 18.—Patient had a bad night, though experienced little pain.

June 19.—Vaginal tampons removed. The vagina well syringed out with iodine water.

June 20.—Vagina syringed three times a day. Temperature normal; patient experiences very little pain.

June 21.—The chloride of zinc wool removed from the cavity of the uterus. The uterine cavity well syringed out with 1 to 40 carbolic lotion. A dry tampon of wool replaced in uterus.

June 22.—Plug removed from uterus. Cavity well syringed out three times a day, much discharge. Temperature 99.8° F.

June 23.—A slough came away from the uterine cavity.

June 24.—No discharge or pain.

June 28.—Uterus packed again with zinc chloride wool.

July 1.—Uterine plugs removed.

July 6.—A large slough came away from cavity of uterus. Patient menstruating.

July 15.—No discharge or pain. Patient left the hospital against advice, as she was very anxious to get home again.

August 2.—Readmitted. There is an ulcerated condition of the edges of opening into uterus, to which a further application is to be applied.

SOME RESULTS OF A BACTERIOLOGICAL EXAMINATION OF THE PIPETTES AND COLLYRIA TAKEN FROM A TREATMENT CASE USED IN OPH-THALMIC PRACTICE, WITH THE EFFECTS OF IN-OCULATIONS.

A PRELIMINARY COMMUNICATION.

Read before the College of Physicians of Philadelphia, April 3, 1893.

BY G. E. DE SCHWEINITZ, M.D.,

Clinical Professor of Ophthalmology in the Jefferson Medical College; Professor of Ophthalmology in the Philadelphia Polyclinic; Ophthalmic Surgeon to the Philadelphia Hospital;

E. A. DE SCHWEINITZ, Ph.D.,

Chemist in the Bio-Chemic Laboratory, Department of Agriculture, Washington, D.C.; Professor of Chemistry in the Medical Department, Columbian University, Washington, D.C.

THE facility with which various fungi grow in many of the lotions commonly used in the treatment of ocular diseases, and particularly the proneness of the solutions of the alkaloids-cocaine, atropine, eserine-to accept this kind of contamination, has for a long time influenced the direction of much attention to the best methods of sterilization under these. circumstances. True, these fungi and germs are not always, or not usually, pathogenic in the ordinary acceptation of the word; but the cases of wound infection, for example, after cataract extraction, from the use of unclean solutions, the microbic origin of toxic conjunctivitis (atropine, eserine, and cocaine conjunctivitis), and the probability, as Philippson\* insists, that certain ulcers of the cornea owe their origin to infected atropine drops, furnish grounds for the exercise of every proper precaution to secure clean fluids, bottles, and pipettes.

The germs, as Franke has shown, may be present in the bottles and pipettes, or, as Davidson† has demonstrated, in the distilled water (micrococcus aquatalis, etc.); again, they may come from the surrounding air, or, finally, and this, as Franke insists, presents the greatest difficulty to overcome, they may be introduced into the lotions by the surgeon himself when, for example, the end of the pipette has accidentally touched the conjunctiva or the eyelashes, and thus carried into the bottle some of the micro-organisms so commonly present in these structures.

Franke, to whose research we have referred,

<sup>\*&</sup>quot;Ueber ulcus corn. serp., durch Eintäufelung septischer Atropinlösungen hervorgerufen." Hosp. Tid., R. iii., 1885. Quoted by Franke, Arch. f. Ophthal., Bd. xxxvii., Abt. ii. p. 73.

<sup>†</sup> Berlin. Klin. Wochenschr., 1888, No. 35. Quoted by Franke, loc. cit.

gives a very interesting resume of the various procedures which have been practised to secure sterilization under these circumstances. From the time that Kroemer added to solutions of the alkaloids salicylic acid (1 to 400), boric acid (4 to 100), and carbolic acid (1 to 1000), which, even in this strength, was found sufficient to prevent the growth of fungi, up to the present date, a variety of methods have been practised, which may be summarized as follows: Sterilization by heat, by the addition of an antiseptic, by the combination of these two methods, and by the chemical synthesis of alkaloids with antiseptic acids.

Particular attention has been directed to cocaine. Sattler, for example, was accustomed to prepare a solution of this alkaloid by adding to it a 1 to 5000 solution of bichloride of mercury, which later was changed to a 1 to 10,000 solution upon the strength of some investigations made by Herrnheiser. The same method of preparing cocaine is extensively used by many surgeons.

Eversbusch boiled the solution preparatory to an operation, a procedure which sterilizes the fluid itself, but does not prevent the entrance of bacteria from the surrounding air.

Hirschberg, with characteristic thoroughness, first sterilized his solution in the ordinary manner in a sterilizing apparatus, and then added to it sublimate (1 to 5000).

Finally, an attempt to secure an antiseptic drug has been made by combining eserine and cocaine with salicylic acid, in the form of salicylate of eserine and the salicylate of cocaine, a pharmaceutical experiment at one time endorsed by Galezowski and Petit.

As there seemed objections to some of the methods and uncertainties in regard to others, Franke has reviewed the whole subject, and endeavored to discover the simplest and safest method of sterilizing eye-lotions, and has devoted himself to the sulphates of atropine and eserine and the hydrochlorate of cocaine, the first in one-per-cent. and the second in two-per-cent. solution.

The most important conclusions which are given by the author at the close of his paper are here summarized: Chemical disinfection of "eye-drops" is a method in general to be preferred to a sterilization by heat, because by the latter procedure the lotions are not protected from the micrococci which may fall into them from the surrounding air. The drugs which may be employed for this purpose are sublimate (I to 5000 and I to I0,000), oxycyanide of mercury (I to 1000 to I to 1500), resorcin (one per cent.), carbolic acid (one-half per

cent.), boric acid (four per cent.), with one per cent. of carbolic acid, Panas's fluid and thymol in the form of thymol water or chloroform water. The last two substances have the disadvantage of producing smarting and burning of the conjunctiva. In their behavior towards the staphylococcus pyogenes flavus and Michel's trachoma coccus, sublimate (1 to 1000), oxycyanide of mercury (1 to 1000), and thymol water surpass the others.

It is not possible, however, for ophthalmic purposes to use these lotions in a strength sufficient to obtain an absolutely antiseptic action, but in general it is safe to add a portion of sublimate lotion (I to 10,000) to atropine and cocaine solutions, in order to make them aseptic for a space of from one-half to one hour.

Sterilization alone of atropine and cocaine solutions, when they are used in operative work, without the addition of an antiseptic, is not nearly so satisfactory as a combination of the two methods.

The addition of a 1 to 10,000 sublimate lotion to an atropine solution prevents the production of atropine conjunctivitis.

In addition to these precautions, it is recommended that the bottles and pipettes be sterilized by boiling and mechanical cleaning. In short, two methods of sterilization are practicable,—namely, the addition of a chemical substance and the use of heat,—and even Franke does not feel quite safe unless he employs both.

Pergens,\* after reviewing the various methods of sterilization, and pointing out the advantages and disadvantages of each, suggests that hypodermic tablets, which have been carefully manufactured and well dosed, shall be prepared. These are dissolved in sterilized water and poured into bottles of the capacity of three to five grammes. Each patient is treated with a different tube, which is then plunged in the sublimate solution, where it remains for several hours. These pipettes are washed with water and sterilized with steam, because he believes the principal cause of infection to be from these sources.

Heat alone, however, is entirely sufficient, if proper precautions are taken that the surrounding bacteria shall not fall into the fluid and that a convenient method shall be designed for heating the fluids. To this end Stroschein† has described a new bottle, or rather a combination of flask and pipette. He has had

<sup>\*</sup> Annales d'Oculistique, December, 1891.

<sup>†</sup> Archiv f. Ophthalmology, Bd. xxxviii., Abt. 2, p.

blown glass bottles constructed with droppers which may be directly exposed to the flame, thus rapidly sterilizing the bottle and its con-The pipette has two conical ends, and is introduced into the neck of the bottle point upward, the rubber head being removed before the reversal. If the collyria are to be boiled, the small tube must be reversed, so as to give free vent to the steam, which, passing out of the tube, sterilizes it at the same time. Experiments have shown the inventor that the collyria need to be boiled only three or four minutes to render them perfectly sterile, and for the point of the tube, which is directed upward during the ebullition, likewise to become sterile. The loss of water which is produced by a boiling of three or four minutes is about one cubic centimetre; hence, if concentration of the solution is to be avoided, fifteen drops of water should be added before the boiling is commenced.

A number of so-called antiseptic droppers have been devised, one pattern consisting of the combination of the dropper and glass cork in a single piece of glass. All of these devices are ingenious, but do not secure the introduction into the eye of an aseptic fluid, because, as has been proved over and over again, the water in which the drug is dissolved may not be clean, and solutions of the alkaloids, with the possible exception of eserine, even when freshly prepared, will usually yield a growth of fungi and various micrococci in culture media.

Although the question of infection and sterilization of eye-lotions has so frequently and so thoroughly been investigated, we desire to present the results thus far obtained in a research the object of which was to ascertain, purely for our own satisfaction, the condition of the fluids, pipettes, and bottles contained in a case which had been much used in the treatment of various ocular disorders, although never in operative work, and with which no special precautions had been taken. The examinations are not complete, but they have developed some points of interest, and these may be briefly stated.

The following fluids were taken from the bottles and carefully placed in sterilized flasks and suitably corked: boric acid, 15 grains to the ounce of distilled water; bichloride of mercury, 1 to 10,000; nitrate of silver, 1, 5, and 10 grains to the ounce, respectively; sulphate of atropine, 4 grains to the ounce; hydrobromate of homatropine, 8 grains to the ounce; hydrochlorate of cocaine, four per cent.; sulphate of eserine, 1 grain to the

ounce; and Gruebler's fluorescine, two per

The pipettes which had been used in these fluids, and in them only, as each one is attached to its own bottle by a special arrangement, were also placed in carefully-sterilized flasks and examined.

The droppers were tested in the following manner: Thoroughly-sterilized distilled water was drawn up into each pipette until the latter was three-quarters full, and then forced out by the rubber bulb and allowed to drop into potato-tubes, peptonized beef-broth, and agar-agar. The tubes were then placed in the incubator and examined at the end of forty-eight hours.

The cocaine and eserine droppers treated in this way gave, in forty-eight hours, growths on all three of the culture media, which, upon examination, proved to be a mixed culture of long and short bacilli and micrococci.

After two weeks a growth was noticed on the potato culture from the fluorescine pipette; but it is not certain that this was not the result of a contamination.

Other droppers tested in exactly the same way—namely, those from the atropine, homatropine, and pyoktanin solutions, and an unused dropper—yielded no growth whatever.

The lotions themselves were treated by transferring to the culture media,—potato, peptonized beef-broth, agar-agar,—by means of a platinum loop, drops of the liquid to be examined. The cocaine, boric acid, atropine, and homatropine lotions developed growths on potato, peptonized beef-broth, and agar-agar. At first the drop inoculations of the fluorescine yielded no result; later, a larger quantity gave an abundant fungus growth. The other solutions developed nothing at all,—namely, eserine, nitrate of silver, and bichloride of mercury.

The pathogenic effects of the culture so far obtained, though not pure, were next tried. The agar-agar cultures were the source of the material for injection, and an emulsion of the surface growth and the condensation water of the culture was used, one-tenth of a cubic centimetre for each injection. The injections were made by means of a hypodermic syringe into the anterior chamber of a rabbit's eye, care being taken not to injure the lens. The cultures from which the injections were made were from the boric-acid lotion, cocaine, fluorescine (dropper), homatropine, and eserine.

The eserine growth caused in the eye of the rabbit a slight inflammation of the iris, which disappeared in two days.

The growth from homatropine produced a mild iritis, which lasted for four days.

The culture from the fluorescine dropper provoked a slight iritis, associated with a moderate keratitis, which disappeared spontaneously in eight days.

The cultures from the boric acid and the cocaine—the first derived from the solution and the second from the pipette—produced a violent hypopyon keratitis and purulent iritis.

Rabbits were then taken and the corneæ abraded with a sterilized needle. The boricacid and cocaine cultures were dropped on eyes thus prepared and rubbed over the abraded surfaces. The result was a slight ciliary injection in the region of the abrasion and a moderate haze in the cornea surrounding it, which lasted for two or three days, and was more pronounced than the inflammation produced by a simple abrasion of the cornea without the application of the germs.

In order to control the injections in the anterior chamber, the eserine solution, which had not produced a growth upon the culture media, was injected without results; hence the hypopyon keratitis developed was not the effect of the fluid, but of the bacilli and fungi which it contained. Further control experiments with negative results were made by the injection of sterile culture liquids.

The cultures from the boric acid and cocaine show under the microscope long and short bacilli and micrococci; proteus vulgaris and bacterium termo (Viguel) have been isolated. The bacilli have the general appearance of the ordinary water bacilli. Sufficient time has not yet elapsed to separate them in a pure culture. The homatropine growth and the one from the eserine dropper showed short fat bacilli. The atropine and fluorescine (dropper) cultures are the ordinary fungi.

The experiments in detail, with the daily appearance of the eyes, follow:

November 30, 1892.—Gray rabbit, No. 1; weight, 4 pounds; received  $\frac{1}{10}$  cubic centimetre of the culture obtained from the eserine dropper.

December 1.—The eye was very slightly injected and iris hyperæmic.

December 2.—Eye entirely well.

November 30, 1892.—Gray rabbit, No. 2; weight,  $4\frac{1}{4}$  pounds; received an injection in the left eye of  $\frac{1}{10}$  cubic centimetre of the culture from the fluorescine dropper.

December 1.—Centre of the cornea cloudy.

December 2.—Eye still clouded; the bloodvessels of the iris decidedly injected.

December 3.—Still a slight inflammation of

the iris; apparently a little pus in pupillary space, but the cornea no longer cloudy.

December 5.—Iris still slightly inflamed; pus almost entirely disappeared.

December 6.—Slight iritis.

December 7.-Slight iritis, but better.

December 9. - Still a very slight inflammation.

December 13.—Eye entirely well.

November 30, 1892.—Rabbit, No. 3; weight, 4 pounds; received  $\frac{1}{10}$  cubic centimetre from culture growth of homatropine solution.

December 1.—Iris a little inflamed and a slight opacity in pupillary space.

December 2.—Eye still inflamed.

December 3.—Inflammation subsiding.

December 5.- Eye almost normal.

December 7 .- Slight iritis.

December 9 .- Slight iritis.

December 14.—Eye perfectly well.

November 30, 1892.—Brown rabbit, No. 4; weight, 4 pounds; received  $\frac{1}{10}$  cubic centimetre of culture from cocaine dropper.

December 1.—Eye very cloudy and inflamed.

December 2.—Eye swollen, inflamed, mattering.

December 3.—Extensive iritis; hypopyon.

December 7.—Extensive hypopyon keratitis.

December 9.—Eye about the same as December 7, except that the blood-vessels in the cornea had become very much more prominent.

December 14.—Eye in the same condition as December 9.

February 7, 1893.—Eye removed. There had been practically no change in its appearance since December 14.

November 30, 1892.—Rabbit, No. 5; weight, 4½ pounds; received an injection of  $\frac{1}{10}$  cubic centimetreof culture from the boric-acid solution.

December 1.- Eye clouded.

December 2.—Still slightly clouded, and the iris hyperæmic.

December 3.—Extensive iritis and keratitis.

December 5.—Eye apparently better.

December 6.—Eye again more cloudy; still severe iritis and keratitis.

December 7.—Still severe kerato-iritis.

December 9.—Same as December 6.

December 13.—Inflammation has extended over entire surface of cornea; severe hypopyon keratitis.

February 7, 1893.—Eye removed for section; apparently the same condition as on December 13.

December 13, 1892.—Gray rabbit, No. 6; weight, 4 pounds; received \( \frac{1}{10} \) cubic centimetre in left eye from culture obtained from cocaine solution. This solution when first tested in October had shown no growth, but

when cultures were made again in December a decided growth was developed upon agar, consisting of long and short bacilli. In making the injection the capsule was accidentally punctured.

February 7, 1893.—When the eye was removed its appearance was almost identical with that of the boric and other cocaine eye,—viz., extensive kerato-iritis.

January 7, 1893.—Rabbit, No. 7; weight, 3½ pounds; cornea of right eye was scraped with a sterile knife-blade, and some of the boric-acid culture dropped on the abraded spot and rubbed over it.

January 9.—A slight injection of the blood-vessels in ciliary regions just above the point where the surface was abraded. A small cloudy spot, the size of a pins' head, formed about the centre of the line of abrasion.

January 12.—Eye normal.

January 7, 1893.—Maltese rabbit, No. 8; weight, 3 pounds; surface of cornea abraded and a few drops of the culture from cocaine solution rubbed in.

January 7.—Slight reddening in ciliary regions and cloudiness in cornea.

January 12.—Faintest cloudiness in cornea; otherwise quite well.

February 9.—Eye normal.

January 7, 1893.—Black Angora rabbit, No. 9; weight, 4 pounds; surface of cornea scraped and a few drops of culture from cocaine dropper rubbed in.

January 9.—Injection of blood-vessels in ciliary regions above the point where the surface was scraped.

January 12.—Inflammation has subsided; a very slight cloudiness above where the surface was abraded.

This experiment of scraping the cornea was repeated again on January 21, with exactly the same results as those recorded. Simply scraping the cornea produced a slight injection of the blood-vessels in the ciliary regions; not so much, however, as when the cultures were subsequently applied.

A summary of the results, arranged in a tabular manner, follows.

#### PIPETTES.

Unused pipette Cocaine pipette	No growth. Growth on potato, agaragar, and beef-broth.	Same germs as those found in cocaine solution; inoculation caused purulent iridochoroiditis.	Rubbing abraded cornea with culture produced moderate ciliary injection and slight clouding of cornea.
Fluorescine pipette Atropine pipette	Growth on potato. No growth.	Inoculation caused slight iritis. Pipette had been frequently cleansed with sublimate lotion.	clouding of cornes.
Pyoktanin pipette Homatropine pipette Eserine pipette	No growth. No growth. Growth on all three culture media.	Slight iritis caused by inocula- tion, which speedily disap-	
Boric-acid pipette	No growth.	peared. This pipette had often been cleansed with sublimate after use.	
		FLUIDS.	
Boric-acid lotion	Active growth on all three culture media.	Inoculation into anterior cham- ber produced purulent irido- choroiditis.	Rubbing abraded cornea with culture produced moderate ciliary injection and slight
Boric-acid lotion		ber produced purulent irido- choroiditis.  The growth—a fungus—was not used in inoculation, as it was of same nature as that obtained from the fluores-	culture produced moderate
	three culture media.  No growth at first; one month later active	ber produced purulent irido- choroiditis.  The growth—a fungus—was not used in inoculation, as it was of same nature as that	culture produced moderate ciliary injection and slight
Atropine lotion	No growth at first; one month later active growth.  Growth on all three culture media.  No growth at first; two months later active growth on all three	ber produced purulent irido- choroiditis.  The growth—a fungus—was not used in inoculation, as it was of same nature as that obtained from the fluores- cine dropper.  Inoculation produced slight iritis, which disappeared in	culture produced moderate ciliary injection and slight clouding of cornea.  Rubbing abraded cornea with culture produced moderate ciliary injection and slight
Atropine lotion  Homatropine lotion	No growth at first; one month later active growth.  Growth on all three culture media.  No growth at first; two months later active	ber produced purulent irido- choroiditis.  The growth—a fungus—was not used in inoculation, as it was of same nature as that obtained from the fluores- cine dropper.  Inoculation produced slight intis, which disappeared in fifteen days.  Inoculation produced purulent	culture produced moderate ciliary injection and slight clouding of cornea.  Rubbing abraded cornea with culture produced moderate

The two eyes which had suffered most severely from the injections of the cultures viz., from the cocaine and the boric acidwere removed and submitted to microscopic examination. As the lesions are practically the same in each, one description will suffice. The iris is infiltrated with leucocytes, and there is a larger layer of pus on its posterior surface, in some specimens practically filling the posterior chamber. The ciliary body and choroid are densely infiltrated with darklystained corpuscles, the retina is detached and infiltrated, and the papilla inflamed. In brief, there is purulent irido-choroiditis, with secondary involvement of the retina and optic nerve. We are indebted to Dr. William M. Gray for preparing these sections.

These experiments, in general and as far as they go, confirm the oft-repeated observation that solutions of the alkaloids contain mould-fungi,—e.g., aspergillus glaucus, saprophytic bacteria, as the B. fluorescens liquefaciens and B. aquatilis, and B. sarcina lutea. They also confirm the observations which have been recorded, that these solutions, when they have been some time in use, and when proper precautions are not taken to sterilize them, may be contaminated with pathogenic microorganisms which are capable of producing by inoculation into a normal eye a purulent iridochoroiditis.

Referring for a moment to the particular results, it is interesting that one of the two most virulent cultures was obtained from the boricacid lotion, a culture which evidently contained pathogenic germs. The source of these micro-organisms may, perhaps, be explained by Franke's idea that they are introduced into the fluid by reason of the pipette coming in contact with the cilia or conjunctiva of an eye which contains pathogenic bacteria, and it is likely that this lotion was frequently used for irrigating inflamed conjunctivæ. It serves as an illustration of the well-known fact that boric acid is an antiseptic substance of very indifferent power, the minimum degree of concentration in a watery solution in which it is reliable, according to Miquel, being 1 to 13. In the solution with which we experimented the concentration was 1 to 32.

It is further interesting to note that the solution of eserine yielded no growth upon the culture medium, and that when it was injected into the anterior chamber it proved to be innocuous. This is somewhat in accord with some of Franke's observations, who found in a few inoculations from freshly-prepared eserine solutions, and also from those which were sev-

eral days old, that the tubes remained free from growths. The eserine pipette yielded a growth of long and short bacilli and micrococci, consequently its contamination must have come from outside sources which did not gain entrance into the fluid in the bottle.

If it be assumed that the culture from the fluorescine dropper was not due to a contamination (it did not appear until two weeks after the potato-tube was inoculated), it is worthy of remark that it produced a slight iritis when injected into the anterior chamber. Fluorescine solution has been much used in recent times to demonstrate the extent of corneal ulcers, locate small foreign bodies, and expose, by virtue of its power to color green, those portions of the cornea which are deprived of superficial epithelium, or any loss of substance in this membrane, whether it is caused by injury or disease. Hence there is a possibility that through this means microorganisms might be conveyed to the eye and convert a simple abrasion into an unhealthy ulcer. In our experiment the fluid itself was apparently sterile at the first examination; later an abundant fungus growth was obtained.

That mere contact of the cultures with an abraded cornea is unlikely to produce serious inflammatory reaction or purulent infection is evident from our last four experiments, in which the infecting agent was rubbed into a wound of the cornea made with a sterilized knife. Ciliary injection and slight corneal infiltration occurred, which subsided in a few days without treatment, but destructive keratitis did not supervene in any case, although the same cultures injected into the anterior chamber caused purulent irido-choroiditis.

Hence we have a reason for the comparative rarity of untoward results from non-sterile solutions which are so frequently (and almost of necessity) used in eyes manifesting all manner of lesions, but in which the anterior chamber is not opened.

They also furnish additional evidence that unclean solutions which find their way into the anterior chamber—e.g., after an operation—are capable of speedily originating a destructive inflammation of the uveal tract, terminating in panophthalmitis, and emphasize the importance of securing perfect sterilization of any lotion, especially of cocaine, which is to be used in a case requiring corneal section, and that boric-acid solution which is not freshly prepared (15 grains to 1 fluidounce) may be the medium of the most virulent contamination.

SOME POINTS IN THE SURGICAL TREAT-MENT OF SIMPLE ULCER OF THE STOMACH.

READ BEFORE THE BRITISH MEDICAL ASSOCIATION, AUGUST, 1893.

By WILLIAM F. HASLAM, Surgeon to the General Hospital, Birmingham.

CASES of perforation of the stomach due to simple ulcer group themselves into three classes.

- 1. Where no adhesions whatever have formed around the base of the ulcer, so that the contents of the organ pass freely, and at once, into the peritoneal cavity; or where, if any adhesions have formed, these are so slight that they readily give way, producing a similar result. In these cases the perforation is usually found on some part of the anterior surface of the stomach.
- 2. Where adhesions have formed between the stomach and some adjacent organ (these adhesions may have formed before any perforation has occurred), or where the stomach is in close contact with some other organ; the leakage due to perforation may be so gradual that time is allowed for adhesions to form and protect the general peritoneal cavity. In either case a localized peritonitis will be set up, and any resulting suppuration will be shut off from the rest of the peritoneum. In these cases the perforation is more commonly met with at the posterior surface of the stomach, where its relations to adjacent parts are more intimate than on the anterior surface.
- 3. Those rarer cases where adhesions form between the stomach and some hollow viscus or serous cavity, and perforation opens, for instance, the colon, pleura, or pericardium.

It is of the first class alone-viz., those where the peritoneum is rapidly invaded—that I wish to speak to-day, as the clinical progress of these cases is essentially different from that in the other division, and the surgical treatment of each class has to be conducted on a different principle. In the cases where the peritoneal cavity is suddenly invaded as the result of perforation of a gastric ulcer, our aim is to close the perforation and cleanse the peritoneum. In cases of localized suppuration due to perforation, the resulting abscess has to be treated on the general principles that guide us in the management of any such localized peritoneal suppuration, whether caused by a perforating gastric ulcer, or by a similar perforation of the vermiform appendix; while in the last division surgical treatment has to be conducted according to the exact nature of each case.

For treatment by operation to be of any avail in the cases now under consideration, it is absolutely necessary that it should be undertaken as soon as possible after perforation has occurred; delay of a few hours may make just the difference between success and failure, not only by permitting an extension of the intraperitoneal mischief, but by allowing the patient to get into a condition of shock and exhaustion unfavorable for the proper performance of the operation. It is, therefore, of the utmost importance that those engaged in general practice, under whose care such cases first come. should be keenly alive not only to the symptoms indicating so grave a peritoneal lesion, but to the necessity of taking immediate steps for its repair. I propose, before speaking of the operation, to read notes of a case that was under my own care, and to refer to the records of other cases illustrating the symptoms and progress of this terribly fatal condition. I was asked by my colleague, Dr. Saundby, to see the following case, that had been admitted under his care, and which, in his opinion, was one of perforated gastric ulcer requiring immediate operation. S. T., aged seventeen, admitted February 2, 1893, in a condition of collapse, and with the following history: Her friends stated that on the day previous to her admission she vomited some coffee-colored matter, that this occurred again on the following morning, and that at two o'clock in the afternoon, whilst washing clothes at a tub, she was suddenly seized with a very severe pain over the pit of the stomach, followed almost at once by pain over the lower part of the abdomen and under the left breast. The pain was intensely severe, and her friends said "she tore at herself in consequence of it." ure over the abdomen increased the pain. She speedily became collapsed, and was admitted into the hospital at 3.30 P.M., one hour and a half after perforation had taken place.

On inquiry as to her previous history, it was ascertained that during the last three weeks she had vomited after food, but that there had neither been any blood with it, nor even the coffee-colored material that she vomited during the present attack. It was also stated that she had had an attack of vomiting three months ago, but there was no history of pain after food, nor had she been at all anæmic.

On admission she was found to be pale and collapsed, her face was perspiring, and though her expression was anxious there was nothing about it that was typical of an abdominal "facies;" her legs were drawn up, and any movement caused pain. The abdomen was

not distended or tympanitic; the abdominal muscles were rigid, and the pain she complained of was increased by pressure. pain, however, was not localized, but was present all over the abdomen, its intensity being greatest under the left breast in the region of the heart; she vomited several times; the vomited matter was found to contain blood, mucus, and starch granules. Her pulse was fair in character, and varied from 90 to 100. The temperature was subnormal. At 5.30 P.M. the abdomen was opened above the umbilicus just to the left of the middle line, and the peritoneal cavity found to contain gas and The stomach was seen, and some turbid fluid. after some difficulty a perforation was found on its anterior surface near the lesser curvature and close to the cardiac orifice. which was almost large enough to admit the tip of the little finger, was situated in the centre of a dense mass of induration, the diameter of which was about an inch and a quar-The stomach was brought as near to the surface as was possible, and fine sutures were passed through the peritoneum in the neighborhood of the perforation; these, however, would not hold, and finally three stout silk Lembert sutures were inserted through the peritoneal and muscular coats well clear of the induration and the stomach wall on either side of this was drawn together so as to obliterate the perforation. The peritoneal cavity, which was apparently generally contaminated by the contents of the stomach, was washed out as thoroughly as the condition of the patient would allow, the wound closed, and a glass drainage-tube inserted between the liver and the stomach. She gradually got worse after the operation, and died on February 4, 1893, forty-five hours after it was performed. The post-mortem examination showed a general and suppurative peritonitis. stomach was removed and the position of the perforation verified. This was completely occluded by the stomach-wall that had been drawn over it by the sutures.

){ an

ion, <sub>E</sub>

Inder.

1 10

e in

i ne

intra.

Hire.

hane

Ce of

DOV

Drar.

)me

mp.

IOR.

ten

ζOf

W25 )rds

and

**EX** 

92

ted

PX

m-

ď

nl-

er

er

ĸ

ŗ.

п

The true value of operation for perforated gastric ulcer has yet to be determined, and it is only by a careful record of all cases in which it has been performed that we can provide material on which to base any conclusion; experience alone will show in what cases we may carry out this line of treatment with any reasonable hope of saving life. In the case under consideration there are several points worthy of notice.

1. There was nothing in the previous history that pointed with certainty to the fact of

this patient having had a gastric ulcer for any time; it is true that she had vomited at intervals during the past three weeks, but there had not been any pain after food or blood in the vomited matter. This, however, is just the history of so many cases where sudden perforation of a gastric ulcer has taken place; indeed, from an examination of the records of a number of such cases, it is exceptional to find that there have been previous symptoms suggestive of gastric ulcer.

This absence of previous symptoms may be accounted for by the fact that a good deal of pain may be caused by the localized peritonitis and resulting adhesions that are so frequently met with in cases of gastric ulcer. But these are exactly the cases where a sudden perforation is unlikely to occur, for if leakage takes place it causes a localized and not a general peritonitis.

2. The position she was in at the time that perforation occurred must have favored the passage of the contents of the stomach into all parts of the peritoneum, thus starting at once a wide-spread inflammation of that sac.

3. When seen three hours after perforation had taken place some of her symptoms were less marked than one would have expected with an extensive perforation. Though there was evidently considerable shock, there was an absence of the extreme anxiety of face so often associated with a severe peritoneal injury. The pulse was comparatively low in rate and fair in volume. There was no abdominal distention, and the pain was widely distributed all over the abdomen. These modifications in the symptoms can, however, be readily accounted for by remembering that sufficient time had not elapsed to allow the symptoms, of peritonitis to be well developed. The opportunities for watching the early effects of perforation are necessarily few, and one's ideas as to the severity of the symptoms are based on the conditions seen in cases where this lesion has taken place sufficiently long to allow the symptoms of an acute peritonitis to be well developed. In looking over the records of these cases I find that wherever the mode of onset is noted it has been sudden, no matter what the antecedent symptoms may have been. nearly all cases recorded some mention is made of the sudden invasion of this lesion. symptoms grouped under the head of shock were present in greater or less degree in all. Vomiting, though a frequent symptom, was by no means always present. Abdominal pain and tenderness, increased by pressure, were nearly always present; indeed, one can hardly understand their being absent, yet in one case, though there was acute pain, this was relieved by pressure; in another there was very little pain but some tenderness on pressure; in another no pain was caused by pressure, and in another the pain, which shifted about, was relieved by firm pressure. Abdominal rigidity in the early stage and distention later on were frequently noted.

The duration of the cases varied from seven hours to five days, most of them terminating under twenty-four hours, a significant point to bear in mind when considering what prospect of relief surgery can offer. When, therefore, we consider that the chances of recovery after perforation are practically nil, we must feel that, provided the condition is not so bad as to forbid operation, some attempt should be made to place the patient in a more favorable position, even though the chance of success is but slight.

What, then, is the technique of such an op-Every means must be taken to eration? diminish the shock it will necessarily cause. and to effect this the temperature of the room should be high, the patient's limbs and thorax wrapped in cotton-wool and well covered with blankets; and, if the character of the pulse is bad, a brandy enema should be given shortly before commencing. The best position for the incision is above the umbilicus and just to the left of the middle line, so as to miss the falciform ligament. On opening the peritoneum it is possible that positive evidence of perforation will at once be manifest,-viz., by there being air in the peritoneum, together with fluid from the stomach, causing signs of more or less inflammation, according to the time that has elapsed since perforation took place. In searching for the perforation,—and assuming, as seems probable, that it is situated on the anterior surface of the stomach,—it is well to bear in mind that the anatomically anterior surface—that is, the portion between the attachment of the gastro-hepatic omentum and the great omentum-is only anterior in the undistended condition of the organ, and that it becomes, when the stomach is distended and its position altered, practically an upper Consequently that portion of the organ first met with on opening the abdomen will be at no great distance above its greater curvature,—in other words, the lower part of the anterior surface,—a position where perforation does not often occur. If this is regarded as representing the whole anterior surface, it is very unlikely that an ulcer will be seen, the fact being that the finger must be carried along this surface upward and to the back until, far away from the abdominal incision, that portion of the anterior surface near the lesser curvature is found; here, experience teaches us, ulcers frequently perforate. The practical importance of this is that, while we rightly describe the ulcer as being on the anterior surface of the stomach, we must not necessarily expect to find it immediately beneath the incision, for, owing to the alteration in the position of the organ by distention (and the history of many of these cases shows that they often follow a meal), it may be well out of sight and by no means within convenient reach.

Further, a want of recognition of this fact may account for the statement in some of the reported cases that the ulcer was on the posterior surface of the stomach, when from the notes it must have been on the anterior surface. even though its exact situation may have been at great depth from the anterior abdominal wall. Obviously, if perforation occurs through the posterior wall, we can only reach it by first forcing a way into the lesser sac of the peritoneum. In the case on which I operated I was surprised to find that an ulcer on the anterior surface could be so far away from the incision and so difficult to bring forward for suturing. Having found the perforation, the next step should be the complete removal of the contents of the stomach. This may be effected by means of a large tube and funnel and some warm water. In some cases the already existing opening at the seat of perforation may be sufficiently large to admit the tube, or, if not, it should be introduced through the œsophagus, the hole in the stomach being closed either by seizing it between the fingers or holding a sponge over it. The advantages of thus clearing the stomach are evident when we remember that it is frequently full when perforation takes place, and that the resulting shock at once stops digestion. This quantity of half-digested food, if left, will not only severely test the line of suture, but will in course of time cause movement in the stomach wall, or set up vomiting, thus interfering with that complete rest so necessary for repair.

Various suggestions have been made as to the best way to treat the perforation, and, while it may not be possible to follow out one plan in all cases, we must favor that method which, while it is efficient, will make the least demand upon the patient's power of endurance. The most radical method is to excise the ulcer with its indurated base, and then suture up the rent. This plan, however, does not commend itself favorably to me for various reasons: 1, It necessitates the removal of a considerable portion of the stomach wall; consequently the difficulty of efficiently closing this will be great. 2. It must cause free hemorrhage, and the patient is not in a condition to stand any loss of blood. 3. This hemorrhage will cause a waste of valuable time.

Closure of the perforation without its removal seems to offer in many cases the most satisfactory plan of treatment. To carry this out the stomach must be drawn up as near the surface of the body as possible, to facilitate which it may be necessary to enlarge the In applying suturesabdominal incision. which should be of the Lembert type-we must remember that for a considerable distance around the actual perforation the stomach wall is so indurated that it is impossible to cause sufficient inversion of this part so as to get the peritoneal surfaces in opposition; nor, indeed, will the tissues bear the strain put upon them by the sutures. It is therefore necessary to go outside this area of induration in order to get a good hold of the stomach wall at a point where it can be drawn over the orifice so as to meet the peritoneum from the opposite Three Lembert sutures of stout silk side. passed in this way in the case I have recorded buried the perforation, together with its surrounding induration, and completely shut off the cavity of the stomach from that of the peritoneum. I would suggest, however, that in addition to these deep sutures some small superficial ones should be inserted in the intervals between them, and that a similar precaution should be taken at each end of the resulting puckering.

Suturing having been effected, our attention must be turned to cleansing the peritoneum, and here the question will arise as to whether it will be necessary to drain the pelvis. Bearing in mind that fluids tend to gravitate into that cavity, and the extreme difficulty there is in being sure that every particle of foreign matter has been removed, it seems probable that, at any rate in most cases, pelvic drainage is desirable. If the operator, therefore, intends to use the drainage-tube here, he had better at this stage of the operation make the necessary incision for it. This will also facilitate the thorough flushing of the peritoneum, which should be carried out in the most liberal way and with volumes of hot water, the intestines being moved about and the current directed in such a manner as to remove, if possible, every particle of the extravasation. There is no doubt that this is a most important step in the operation, and one that must be persevered in as long as the anæsthetist considers the patient can stand it, unless the operator is satisfied before any such prohibition is necessary that sufficient has been done. All excess of fluid should then be removed, the drainagetubes inserted, and the wounds sutured in the usual way. I feel that it is necessary to emphasize the importance of this thorough flushing of the peritoneum not only from the fact that the chief cause of failure after operation has been suppurative peritonitis, but on account of a somewhat natural feeling on the part of the surgeon that, after the time already spent in finding and suturing the ulcer, the patient's condition will not permit more than a limited amount of flushing, which, while it satisfies his conscience, is of no real value.

It is on every ground undesirable to have a patient die either during an operation, or very soon after, as an immediate result of it. But it must be understood that a clean peritoneum is the patient's only chance, and therefore the anæsthetist must most carefully watch the general condition of the patient, and only stop the surgeon if he considers that further time spent on the operation will prove fatal.

Two other methods of treatment have been suggested, and these may be considered under one heading. By these the perforation is brought to the abdominal incision and fixed there either by suture or a bone plate, so as to leave a gastric fistula. While such a procedure may be the only possible course to take in some cases, it is hardly the one to follow where a more complete operation can be done, for if temporarily successful, it necessitates a second operation later on for the closure of the fistula.

Before closing this paper I should like to suggest whether, considering the dangers incident to a gastric ulcer, it would not be well in a case where the symptoms are unequivocal to seriously consider the question of opening the abdomen with a view to the treatment of the ulcer. This might in some cases be of such a size as to permit of excision, or the stomach wall might be drawn across it so as to prevent perforation; or why might not its base be strengthened and protected by grafting on it a piece of omentum carefully removed for that purpose? Unfortunately, however, the cases where surgical treatment could be best carried out are just those where, owing to the absence of adhesive peritonitis, symptoms are either entirely absent or do not point so clearly to the nature of the case as to warrant even the slight risk of an exploratory incision. Moreover, we must not lose sight of the fact that ulceration of the stomach frequently occurs at several points, so that the difficulties in the way of dealing successfully with such cases are so great as to offer but little hope of benefiting them to any extent.

A PAPER INTRODUCTORY TO THE DISCUS-SION ON THE RADICAL CURE OF HERNIA.

READ BEFORE THE BRITISH MEDICAL ASSOCIATION, AUGUST, 1893.

BY RUSHTON PARKER, M.B., B.S., F.R.C.S., Professor of Surgery in Victoria University.

THE radical cure of hernia has been attempted, and no doubt attained, by various means, among which herniotomy holds a conspicuous place. My business today is solely with such means as I have myself employed, and any technical knowledge that I may have acquired having been derived from the practice of herniotomy, dealing with the projecting sac in some manner intended to abolish the offset of the same from the peritoneal cavity, to obliterate the path along which viscera may protrude, to do away not only with the existence of a hernia, but, if possible, with all further tendency to it.

Results as complete as can be wished, and as enduring as have been possible, during the twenty or more years that surgeons have been thus at work, are abundantly known, and are the monopoly of none. But I know of no method that is not open to failure in certain severe and obstinate cases that most require it, some of which still die unrelieved after, may be, several operations, each apparently more successful than the last, but all proving but of temporary, and sometimes brief, duration. I think, therefore, that those surgeons are the best guides who do not profess too much, or lead others to form exaggerated expectations.

The two factors with which I am concerned, then, are herniotomy for access and reduction, and the treatment of the sac for cure. My herniotomies up to date have numbered two hundred and ninety-one, and will be found recorded to the number of two hundred and eighty in the current numbers of the *Provincial Medical Journal* in eight tables, including an analysis with percentage of deaths during a period of nineteen years. Omitting fifteen before I made systematic attempts at radical cure, and twenty-five that proved fatal from strangulation, there remain for cure about two hundred and fifty operations in two hundred persons in whom radical cure was undertaken.

Of sixty-one strangulated, thirty were inguinal, twenty-one femoral, and ten umbilical and ventral. No deaths are included here, as they resulted from the effects of strangulation and not from the attempt at radical cure. In one hundred and ninety unstrangulated there were eight deaths, or 4.2 per cent., attributable to the operation. To go further into detail of the one hundred and ninety unstrangulated, one hundred and thirty-seven were inguinal in one hundred and seven persons, with five deaths; twenty-five were femoral in 20 persons, with one death; twenty-eight were unsbilical and ventral in twenty-four persons, with two deaths. Of the one hundred and thirty-seven inguinal cases, twenty-two were infants and children under twelve years (one strangulated, aged three weeks, in which a perfect radical cure has lasted nine years, and twenty-one unstrangulated, with one fatality).

To sum up the varieties, there were one hundred and sixty-seven inguinal in one hundred and twenty-eight persons, forty-six femoral in forty-one persons, and thirty-eight umbilical and ventral in thirty-three persons.

Any trustworthy estimate of the proportion of failures I am unable to make, and can only say that those which are known to me are a very small minority in femoral and inguinal cases. The proportion in umbilical cases is, however, considerable.

Passing by the details of herniotomy, in which the opening of the sac can be dispensed with only where the contents are reducible and must be performed in most other cases, there remains to consider the treatment of the sac. In my hands this has been confined to two processes,—ligature in less than half, and some sort of suture in more than half.

My own first attempt at radical cure by means of herniotomy was made in June, 1879, in a case of inguinal omental hernia in a man aged twenty-eight, the sac being treated with a silk suture. A perfect radical cure resulted. and was confirmed ten or more years after. The following year I did a similar operation on a very similar case in a man aged twentyfour, but the hernia returned in a short time. This not proving a satisfactory or trustworthy method, in my opinion at the time, it soon after occurred to me to practise ligature of the sac high up, and on the 4th of January, 1881, I did my first case, a femoral omental hernia in a woman aged forty-five, the narrow pedicle of which was tied with carbolized catgut with the neck of the sac, and which healed by first intention under a single dressing, remaining a complete success when last seen, a few years

after the operation. From this date I systematically ligatured the neck of the sac in every case of hernia on which I operated, whether inguinal, femoral, or umbilical, and mentioned the practice to my neighbors, who freely followed my initiative. I soon learned that similar operations had been previously performed elsewhere, notably by Annandale at home, and by Czerny abroad. It treating the neck of the sac by ligature, it was my practice to expose and open the spermatic cord in the inguinal region, and to strip the hernial sac from the Pessels and duct included with it in the cord. When the sac was shut I stripped it all up with its blind end, either opened or unopened as appeared convenient.

I did not make a practice of stripping up the whole of the sac when it reached far down into the scrotum, but only enough to get hold of and enable me to reach its offset from the peritoneal pouch, in that case cutting across the peritoneal sac somewhere about the external abdominal ring, and leaving the part below to take care of itself. I have once or twice taken pains to close the tunica vaginalis testis, when so left open in the scrotum, but I soon discontinued this perfectly useless and superfluous proceeding. Similarly in the inguinal herniæ of women I have left undisturbed the labial portion of the sac when it extended so far. I did not usually attempt to approximate the pillars of the ring, unless widely divergent during the period in which I used ligature for the sac, and am not aware that the result was vitiated by the omission, but in some cases I did so, and, I think, with advantage. In femoral hernia the sac, and sometimes its coverings, were tied as high as could be reached, no attempt being made to approximate by suture the edges of the fascial opening.

Some of the details of these cases, their size and other characters, may be seen at a glance at the tables I have alluded to as in course of publication. Some of the really severe cases have succeeded well, and some of the failures have been in cases which appeared simple, but in the main the results of ligature of the sac in adults. whether inguinal or femoral, have been gratifying. The failure appeared to be owing to flabbiness of the abdomen in some and tight distention in others. It must also be allowed that improvements in the details of antiseptic practice, not merely in their general application but also in their special application to hernia, has enabled the operations of more recent years to surpass in success those of an early period. It certainly is, I think, a factor in my individual experiences.

Another cause of failure has been, I think, an insufficient length of time spent in lying down after the operation. It is often difficult to persuade hospital patients to submit to what they are apt to consider useless sacrifice of time when they feel well, and fancy they must be fit again for work; and it often happens that want of room leads to a too early discharge of the patient who will not lie quiet at home for due consolidation of the reunited parts, but wants to be up and doing. This was often the case during my assistant surgeoncy, when it was difficult to have patients retained in hospital after they had healed from their wounds. private patients are more easily managed and controlled in a matter of this kind, and almost complete success has resulted accordingly in my cases.

In the year 1881 I operated on two boys of seven and eight, each with a large inguinal hernia, but in both recurrence took place. I then regarded the operation as perhaps not well suited to that character of case; but now I regard infancy and childhood as the time of life above all others in which herniæ can best be treated even if of large size. My only fatality under twelve years of age was during the time when I still employed ligature, and was that of a child aged seven weeks, in whom the whole of the small intestine had descended into an inguinal hernia.

Let me now pass on to the treatment of inguinal and femoral hernise, devised by Professor Macewen, and published by him in 1886 and 1887, but I regret not undertaken by me till September, 1888. As soon as ever I learnt the details of this method, it commended itself to me as vastly superior to the method by ligature, which I had previously regarded as both simple and perfect. Macewen's method is sometimes difficult of execution, and may appear to some to be rather complicated; but it is physiologically so sound and reasonable that I at once adopted it.

If the sac is to be stripped up, I consider Macewen's plan of hauling it up and fixing it inside the abdominal wall far superior to that of ligature, and not, like that, devitalizing the stump. Of course we know that perfect asepticity prevents sloughing of even a devitalized stump; but the risks of failure seem to me to be less by adopting Macewen's method, which I have practised in considerably more than a hundred cases. I have had, however, my disappointments with Macewen's method in the form of obstinate suppuration about the suture employed to draw up the sac, even in cases where union by first intention had previously

occurred. I used at first the green catgut, which I understand is prepared by sulphurous acid, and began to fear that it was imperfectly sterilized. I then used sterilized silk with the same result. It was not till after I had practised the operation for four years that it occurred to me that it was due to a slight modification I had ventured to make in the method of fixing the sac to the abdominal wall. ewen draws up the thread that is tied to the end of the sac and laced through it singly through the abdominal wall and then fastens it off by passing it several times through the external oblique. I thought it would be a better fastening to leave the thread double and bring each end through a separate puncture in the abdominal muscles, tying both together in a knot. This, although a perfectly secure attachment of the sac to the inside of the abdominal wall, was. I believe, the unforeseen cause of so pinching the muscular tissue as to set up physical irritation even in the aseptic state of the wound and tissues. The result was a serous discharge, which later became purulent, with the establishment of a sinus that could only be closed after fishing out the offending suture. I mention this in detail because the modification on which I ventured is one that may daily occur to and be acted upon by others; but it is a drawback instead of an improvement; and I can only say that I now keep as closely as possible to the details advised by the originator. I adopted also the chicken-bone drainage-tubes, but I have since discarded the use of drainagetubes almost entirely, in common with the custom now so generally adopted. Since I adopted strictly the method of Macewen as described by him I have had little or no trouble with the thread holding up the shrunk and puckered sac inside the abdominal wall. thread I use of green catgut, than which I cannot imagine anything more perfect. I have no doubt that silk properly sterilized is equally good, and should not hesitate to trust to it; but the inventor mentions catgut, and that is why I keep to it. I also approximate the pillars of the ring by overlapping the outer outside the inner as nearly as I can according to Macewen's injunction. Much as I like this operation for adult femoral and inguinal herniæ, I am bound to own that in a few inguinal cases recurrence has followed. Out of eight cases under twelve treated by ligature during a period when the dressings were not so well managed as they are now, one case died and there was one recurrence; while out of thirteen treated by Macewen's method I know of no recurrence, and the simplicity of the recovery and perfection of the healing, due partly, no doubt, to improved methods of dressing, has convinced me that this is the time of life at which to operate for hernia if it can be managed.

The younger the patient among adults the better and easier is the success; but great as is the success among young adults, it is far outstripped by that met with in infants and young children.

Nothing could be more satisfactory than the curative effects of ligature simply applied to the stripped peritoneal lining of the sac in several cases of umbilical hernia.

One such case, a woman aged fifty-seven, operated on in July, 1881, lived free from hernia till January, 1892, when she died from apoplexy.

Only a fortnight ago I resorted to ligature with green catgut in the strangula-umbilical hernia of a man aged fifty. To prevent slipping I passed a suture of the same material through the tied neck of the sac and around the ligature fixing it in its place. But although perfect aseptic healing by first intention took place, there accumulated some sanious serum around the tied stump of the sac, due largely, I think, to the diminished vitality of the stump thus constricted. On the smallest scale there can be no objection to this strangulation of peritoneum and fascia; but in large masses the strangulated tissue suffers and sloughs if septic elements get in.

But in obstinate umbilical cases the ligature proved so inadequate to prevent a return of the hernia, although succeeding admirably for a while, that I have had to resort to a method of suture in place of it.

There only now remains to me to mention the method I adopt for umbilical hernia after having in vain tried ligature in certain obstinate cases. It simply consists in covering the aperture with the sac and its coverings arranged in two layers, in what I call a doublebreasted-coat fashion. Such a garment is sometimes doubly buttoned, inside as well as In arranging for the closure of such a hernia I place one-half of the sac and its coverings inside the other half and sew them together; the two halves, or upper and lower, according to taste. I have done it both ways. Two series of sutures are first inserted, one along the free edge, and the other along the base of the flap that goes undermost. Then the sutures at the free edge of the inner flap are passed from within outward through the base of the outer flap and tied outside it. sutures already at the base of the inner flap are then passed through the edge of the outer flap and there tied. This holds together the two halves of the sac in two layers, and it is well not to tie the sutures too tight. It has succeeded well in small cases, but I am bound to confess that in some of the severest ones, in which it is most needed, I have met with recurrence.

I have operated altogether in umbilical and ventral herniæ over forty times in some thirty-six patients. Thirteen were strangulated, with three deaths; twenty-eight were unstrangulated, with two deaths. The two fatal cases were women, both in good health at the time of operation. Peritonitis resulted in both in spite of what I considered as the greatest care I could possibly take; but one was complicated by pregnancy, and by the ligature and removal of very large masses of omentum.

I therefore feel that the difficulties in some cases in the way of a permanent cure of umbilical hernia are great, though simple and harmless healing may be brought about. This is a great pity; for such cases are greatly in need of radical cure.

In a case of strangulated ventral hernia of traumatic origin I found no sac to deal with, and so closed the opening in the fleshy abdominal wall by three silk sutures so arranged as to produce overlapping of the lower edge outside the upper, after the manner used by Macewen to close the pillars of the ring in inguinal hernia. The operation is recent, but so far appears to be a cure, in addition to having saved the patient's life.

In my last umbilical case, on July 18, 1893, a strangulated hernia in a man aged fifty, occurring in private practice, I once more employed a ligature to the neck of the sac, which was too thin to be advantageously treated by my method of double-breasted suture. To fix the ligature, sutures were placed around it and through the sac before and behind. Both sutures and ligature consisted of green catgut, and the patient is now convalescent, but in some respects still under treatment.

The conclusions I venture to draw from the experience I have had are, that the radical cure of inguinal hernia in infancy and childhood can be attained with ease almost as a matter of certainty, and that accordingly my best efforts should be directed to urge operation when the disease exists at this period of life; that the cure of inguinal and femoral herniæ in men and women is attainable in the large majority of cases, the exceptions being sometimes large herniæ, at others small; that Macewen's operation is the best for inguinal

and femoral herniæ at all periods of life; that the umbilical hernia of adults is capable of radical cure in proportion, which is unfortunately much below that of success in inguinal and femoral, and far short of the urgent requirement of many of the cases, and that the radical cure is, as a rule, applicable to strangulated and unstrangulated herniæ alike.

THE COOL-BATH TREATMENT OF EN-TERIC FEVER.

READ REFORE THE ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION, AUGUST, 1893.

BY C. STENNETT REDMOND, L.R.C.P.I.

Introductory: Object of Paper—Résumé of Origin and History of Bath-Treatment—Brief Quotations from Various Writers—Drs. Broadbent, F. Taylor, Strumpell, Byrom Bramwell, Cayley, and Hare—Rationale of: Indications for, and Method of carrying out—Advantages of: notably Absence of all Local Complications and Consequent Greatly-Diminished Mortality—Disadvantages: Difficulties of carrying out; Popular Prejudice against; Relapse more frequent—Contraindications: Intestinal Hemorrhage; Perforation; Cardiac Failure—Summary of Four Cases successfully treated—Reference to Dr. Barr's Treatment by Continuous Immersion—Conclusion.

MY object in venturing to submit this paper for the consideration and, I hope, the approbation of this the annual representative congress of our Association is not so much because I am able to adduce any new facts, or arguments, in favor of the principle, but (a) to add my limited quota to the yearly increasing aggregate mass of clinical evidence in its support, and (b) to endeavor to enlist the powerful moral influence of this meeting, which may be regarded as the court of appeal of the profession, on behalf of all of its members who may be desirous in suitable cases to advise and carry out the bath treatment, but who are, not unfrequently, deterred (a) by a somewhat natural hesitation to incur the very grave responsibility of pressing on a patient's friends a mode of treatment often disparagingly termed "heroic," and, further, one in the practice of which they may have had no previous experience, or even, as to the value of which, they may be themselves not entirely divested of some scepticism; (b) and chiefly by the difficulty of combating and overcoming the very wide-spread prejudice—I may even say repugnance-which exists in the minds of the general public-not excepting the more educated class-against a mode of treatment so diametrically opposed to hitherto accepted principles; and I submit that, under such circumstances, general practitioners like myself would be in a position to advise its use with greater confidence, if able to adduce the fact that the proposed mode of treatment had the united sanction and approval—the "imprimatur," I may say—of a representative assembly of the profession such as the present.

Let me quote a personal experience: my last case, the eldest son of a man in a good position, developed a high initial temperature, and directly I suggested the bath I was met with the objection that "it was a fad" of mine, and that he knew of no other doctor who approved of or practised it, a fair argument, and one peculiarly difficult to explain, especially its ethical part. However, I got my way by plainly and firmly telling the patient's father that I would carry out the expectant treatment if he insisted on it, but that he must bear the full responsibility for the issue. The result was the steady and uncomplicated progress to recovery of a case which at its onset seemed likely to develop grave symptoms.

Though more generally identified with the name of "Brand of Stettin," the bath treatment is, undoubtedly, English in origin, having been first suggested and practised by Dr. Currie, of Liverpool, in 1787. After his death, however, it soon lapsed into desuetude, and it was not until the year 1861 that it was revived by Brand, and since then gradually rose in favor until it has now become the esstablished practice of the German school.

In England, however, the bath treatment has unfortunately not made much headway, being regarded rather as "an heroic mode," and one, therefore, to be adopted only as a dernier ressort, in the most desperate and hopeless cases, altogether overlooking the fact, as pointed out by several writers, Broadbent among others, that its great value lies in the fact that it obviates or, as it were, anticipates the baneful effects of continued pyrexia, and is, in the fullest sense of the phrase, a prophylactic rather than a curative agent.

"The great source of danger in enteric fever," says Broadbent, "is the prolonged high temperature; and it is to this rather than to the fever poison or process that are due the prostration of the nervous system and the weakness of the heart, which are the most frequent causes of death." To keep the pyrexia in check, therefore, is to minimize the danger attending this disease, and such is the rationale of the cool bath. The bath simply extracts caloric from the patient's body, which is cooled down from 1° to 3.5° F., while, as

I have frequently verified, the temperature of the water is proportionately raised.

Such, briefly, is the history and principle of the bath treatment; but before proceeding to discuss its indications and mode of carrying out, it seems to me desirable to quote a few extracts from well-known writers in its support.

Dr. Broadbent, writing in "Quain's Medicine," says, "Without going so far as to say that Brand's rule should be obeyed absolutely and in all cases, many lives would undoubtedly be saved were cold bathing at once put in practice whenever a temperature of 103.5° or 104° F., in the first few days, shows an attack of more than average severity. It is of the utmost importance that this should be done early, so that the pyrexia may never get the upper hand, and that the intestinal lesions may, if such a thing be possible, be modified. And no patient should be deprived of the chance which is afforded by the bath, when, at any stage of the disease, life is threatened by hyperpyrexia or its consequences, such as violent excitement, sleeplessness, restlessness, or nervous prostration.

"It must be taken as an established fact that the mortality of enteric fever is very greatly reduced by the bathing, and it is the duty of the medical attendant to insist on its uncompromising employment."

Dr. Taylor ("Manual of Medicine") writes, "The influence of a single bath is generally most pronounced,—headache, delirium, stupor, thirst, are at once diminished; and, when the system is thoroughly carried out, by frequent baths at low temperatures, the mortality has been markedly reduced. Local complications are also much less frequent."

Strumpell "regards it as the duty of every physician who undertakes to treat a severe case of typhoid to try his best to have the baths employed," and affirms "that there is at present no other single method of treating typhoid which has so numerous and evident advantages for the patient."

Dr. Byrom Bramwell ("Studies in Clinical Medicine") writes, "Personally I have no experience of it, but the statements published in its favor seem to me very remarkable. I am disposed to think it a most valuable plan of treatment, and that its advantages are by no means sufficiently recognized in this country."

Dr. Bramwell also quotes the following remarkable testimony by M. Glénard: "When treated from the beginning by this method the malady is as monotonous for the physician as for the patient. Neither the one nor the

other has misgivings concerning the cure, which comes to pass without incident after a number of baths, varying from sixty to one hundred, and after a duration of fever of from seventeen to twenty-five or thirty days."

Dr. F. W. Hare, whose opinion is based upon the observation of eleven hundred and seventy-three cases, treated in Brisbane Fever Hospital, from January, 1887, to December, 1889, has written to me, "Why the treatment has made so little headway in England and America is incomprehensible, the clinical evidence in its favor being simply overwhelming, and can hardly be seriously resisted by even the most prejudiced opponent. Certainly any one who has had experience of it would never feel justified in treating a case otherwise, unless under most exceptional circumstances."

Dr. Cayley, physician to the London Fever Hospital, has for many years identified himself prominently and successfully with the bath treatment, and his "Croonian Lectures," published in the *British Medical Journal* for November, 1880, afford a masterly exposition of its principles and practice.

With the exception, however, of a paper by Dr. Sidney Coupland, in the Lancet for 1884, so far as I am aware, no attempt has been made through the medium of the medical journals to popularize the principle and remove that prejudice the undoubted existence of which, both in the professional as well as the public mind, constitutes the chief obstacle to the more general adoption of a line of treatment the practical evidence in favor of which can no longer be doubted by, I venture to affirm, any rational man.

The indications for the bath are clear and brief: In every case where a temperature of 102°, 103°, or 104° F. is developed and maintained for a few days, with marked evening rise and no local lesion, as pneumonia, for example, to account for it, we may reasonably assume enteric as the most probable diagnosis, and the patient must be at once placed in a bath for ten or fifteen minutes, his temperature taken half an hour after, and thenceforth regularly every three hours, and the bath is to be repeated for a longer or shorter interval and at a higher or lower temperature, as indicated by the progress of the case, whenever the temperature rises to 102.2° F. in recto. the general rule, but it has to be modified from time to time in accordance with the exigencies of each case and the idiosyncrasies of each patient.

Thus, in some instances a tepid bath, at 87° F., or even 90° F., for thirty minutes,

is better borne, and exercises an equally controlling effect upon the temperature, than a temperate one at 78° F., or a cool one at 66° F., for fifteen or ten minutes respectively in others.

Personally I prefer, when feasible, to use the tepid bath at 87° F. for as long a period as the patient can bear it without discomfort and the temperature is thereby adequately controlled. Even after the temperature has ceased to rise at any period of the twenty-four hours to the bath limit, but still continues above normal, a warm or a tepid bath night and morning for fifteen, twenty, or thirty minutes is both grateful to the patient, modifies the tendency to dehydration of tissue, and gives a healthy tone to the skin and its secretions.

The following rules for administration of the baths are compiled from various writers, and were rigidly adhered to in my four cases.

- r. A temperature of 102.2° F. in recto calls for a bath, and it must not, as a rule, be permitted to rise higher without giving the bath, except patient is in a sound sleep.
- 2. The bath, long enough for patient to be at full length in, is brought close to the bedside, and patient carefully lifted in and out, in horizontal posture.
- 3. Half an ounce or an ounce of old pale brandy in two or three ounces of soda or aerated lime-water to be given first (in case of adult).
- 4. Patient always must pass water before being put in bath.
- 5. To be immersed up to the neck, the head to be constantly sponged, and the chest and extremities, not abdomen, to be gently rubbed by attendant.
- 6. The first bath to be given at 90° or 85° F. and cooled down by adding cold water to 75° or 70° F. If the patient bears it well, subsequent baths may be given at 80° F. and cooled down to 70° F. The cold water is poured over the patient's head and chest.
- 7. Average duration of bath, ten minutes; some say until patient begins to shiver; but if he begins to feel cold or gets uneasy, the bath must be cut short.

Where a patient is nervous, or bears the cool baths badly, he may be kept in tepid ones at 87° F. for fifteen, twenty, or thirty minutes, the more prolonged immersion producing the desired effect.

8. Lift patient carefully onto a couple of large soft bath-towels laid over a mackintosh sheet and rub him *briskly* dry, except abdomen, which dry gently, envelop him in a warm blanket and put in bed, covering lightly, and

give him a cup of warm coffee and milk or pentonized cocoa and milk.

- 9. Half an hour after take temperature, in recto preferably, when it should be 2° or 3° F. lower.
- 10. Take temperature every three hours, and as soon as it again rises to 102.2° F. repeat bath, except he is sleeping, when, as a rule, he must not be disturbed even if the temperature rises to 104° F., but bath deferred till he awakes.
- 11. Usually a bath is indicated every six hours. Sometimes, however, during the fastigium the pyrexia is so obstinate and uncontrollable as to call for a bath every two or three hours.
- 12. During the night baths are seldom called for, except by an extremely high temperature.
- 13. In case the bath lowers the temperature only 1° F, or less, or only for a short interval, it becomes necessary to lower its temperature to 60° F. (cool bath), or even 45° F. (cold), and lumps of ice may be put in the bath to cool it down with perfect safety (as was done in one of my cases).

In Strumpell's experience, baths below 73° F. are seldom needed. He regards 80° to 83° F. as the average.

14. If intestinal hemorrhage occur, baths must be discontinued.

The advantages of the bath treatment are,-

- 1. The baths diminish the fever by the direct absorption of caloric from patient's body, the water is warmed, the body is cooled in equal proportion, and there is a constant tendency to calm, natural rest, the patient as a rule sleeping between the baths.
- 2. Headache, stupor, and delirium almost always disappear as soon as the baths are given, and in cases where used from the onset, are rarely, if ever, present. The intellect continues clear, the patient remembers days and dates, and takes cognizance of what is going on around him; in fact, the well-known and miserable "typhoid state" is absent. This absence of delirium constitutes one of the chief, and, after the decreased mortality, the strongest practical argument in favor of the bath treatment, as evidenced by Dr. Hare's observations of nine hundred and thirty-four cases, with the occurrence of delirium in but seventy-one, or 7.6 per cent., compared with Murchison's experience of the "expectant" plan, under which it was present in sixty-seven per cent.
- 3. Sordes on lips and the characteristic typhoid tongue, dry, brown, hard, cracked like a piece of toast, are rarely, if ever, seen; thirst

- is lessened and the patient more readily takes and enjoys his nourishment. In fact, the irritable condition of the gastro-intestinal mucous membrane, so usually characteristic of typhoid, is materially modified; vomiting is rare, diarrhoea is often less marked, while the tonic influence of the baths upon the abdominal and intestinal muscular tissue materially lessens the often troublesome symptom of meteorism.
- 4. On the heart and respiratory organs the influence is most marked. The pulse diminishes in frequency and gains in tonicity; while the shock of the bath stimulates deeper inspirations, promotes expectoration, and as a consequence diminishes the risk of pulmonary complications whether acute or hypostatic.
- 5. The healthy action of the skin is maintained. "Dehydration of tissue" is very much lessened by direct absorption of water, and bed-sores are of rare occurrence.
- 6. On the kidneys a distinct diuretic action is often promoted, and this effect was noted in one of the writer's cases.
- 7. The mortality is reduced by fifty per cent., and in this lies the greatest material gain. Now, under the expectant treatment the death-rate has been variously estimated at from ten to twenty-five per cent. (during an outbreak at Hanley, Staffordshire, in 1892, sixteen out of sixty-nine cases died, or a mortality of 23.18 per cent.), but compared with even the lowest of these figures the bath treatment gives results hitherto regarded as unattainable.

Now, in Germany the treatment, as before stated, has become universal, and remarkable results have been attained, as many as four hundred cases in succession having been recorded, without a single death. It is not improbable, however, that some of them may not have been enteric at all, but simple febricula.

Be that as it may, Brand has published statistics collected from various sources which give most favorable, though less phenomenal, results. Thus the death rate is shown to be,—

1	Per cent.
In family practice	o to I
In military hospitals	3 to 4
In consultation cases	3 to 4
In civil hospitals	5

In England, however, there is a tendency to regard German facts and German statistics, rightly or wrongly, as acceptable only with the proverbial "grain of salt;" and hence the treatment has made but little progress in British practice.

Fortunately, however, I am able, through the courtesy and with the permission of Dr. F. E. Hare, to quote the most remarkable and convincing evidence hitherto produced by any British physician, being the results of a most unique experience in the Brisbane Fever Hospital, and embodied in a paper read by him before the Queensland Medical Society.

From January 1, 1887, to December 31, 1889, eleven hundred and seventy-three cases were treated by him, with only ninety-two deaths, equal to a mortality of 7.84 per cent... compared with eighteen hundred and twentyeight cases treated on the expectant plan during the preceding three and a half years, with a mortality of two hundred and seventy-one, or 14.82 per cent., and showing a net gain of, as nearly as possible, fifty per cent. in favor of the bath treatment. In an interesting analysis of the fatal cases, Dr. Hare shows conclusively that the diminished mortality under the bath treatment is due mainly to its influence in averting the tendency to death by exhaustion, pneumonia, coma, etc., conditions common to all febrile states, thus bearing out fully Brand's contention. Deaths from hemorrhage or perforation were slightly diminished under the bath treatment, 4.2 per cent. dying from these causes, compared with 5.2 pc. cent. under the expectant plan.

The disadvantages, or objections, are,—

- I (and mainly). The labor and expense entailed: two trained nurses and, in the case of men, a male assistant being needed, thus limiting its use in private practice to the well-to-do; but in hospital work this does not apply.
- 2. The wide-spread prejudice which undoubtedly exists among all sections of the English public against it.
- 3. The nervous dread which some patients have of the baths; but happily this is soon overcome by the relief experienced, so much so that I have seen such a patient watch his own temperature, and ask the nurse for the bath as soon as it got uncomfortably high.
  - 4. Relapse is admittedly more frequent.
- Dr. James Barr, of Liverpool, commenting upon the difficulties attending the general adoption of the bath treatment, aptly observes, "They are not insuperable either in public or private practice, and where human life is concerned no obstacle should be allowed to impede our path.
- "A good many cases of typhoid fever are permitted to die from want of taking sufficient trouble to keep them alive."

Contraindications.—The only absolute ones are peritonitis, perforation, hemorrhage, and

the advanced cardiac weakness sometimes observed in the later stages of the disease; and Dr. Broadbent considers neither albuminuria nor pulmonary complications prohibitive, and has seen "albumin disappear from the urine and pulmonary congestion disappear after a single bath."

Glénard (quoted by Bramwell) states that "neither age, sex, menstruation, nor pregnancy in any way modifies the treatment.

#### ILLUSTRATIVE CASES.

So far my experience has been limited to four cases, but I may claim some little clinical value for them, in so far as that they all recovered, and that at least one very valuable life would probably have been lost if treated otherwise.

CASE I.—One of my own boys, aged four years, in the evening of the fourth day, developed a temperature in axilla of 104.8° F., on the fifth day two records of 104° F.; on the sixth, three; on the ninth, four. The expectant treatment had been so far adopted, in addition to, first, cool sponging, and, secondly, the wet pack, but these means only reduced the temperature by 1° F., and for a very short interval, never more than an hour.

The aspect of the case being exceedingly grave.—the boy increasingly restless, delirious, with a dry tongue, parched lips, and continuously hurried respiration, 38 to 44, besides frequent diarrhoea, which, by the way, proved both troublesome and obstinate for nearly three weeks,—the question of the cool baths suggested itself to me, and after mature consideration with Professor Phillipson, who fully shared my view as to the gravity and urgency of the symptoms and danger to life, we decided, not, however, without some hesitation, I frankly admit, to try the baths, and at 1.30 P.M. on the ninth day, the temperature then being in axilla 104° F., while the three previous records showed 104°, 104.4°, and 104° F. respectively at eight, ten, and twelve in the forenoon, I gave the first bath at 80° F. for ten minutes, gradually cooling it down to 60° F. The relief was immediate and marked. An hour after he was asleep his temperature was 102° F. and respiration 30. At 4.20 the temperature again rose to 104° F., and a bath was given at 70° F. for ten minutes; at 6 P.M., temperature was 101° F. At ten it was 103.8° F., when bath was repeated.

I may here note that during the first fourteen days, Dr. Phillipson and myself were rather fearing some pulmonic complications, as, for example, pneumonia, and that the relief given to the short, rapid, and at times labored respiration by each bath was immediate and marked. On the tenth day seven baths were needed; on the eleventh, five; on the twelfth and thirteenth, four; fourteenth, fifteenth, and sixteenth, three; on the seventeenth, eighteenth, and nineteenth days, every six hours, and thence only night and morning, as the case progressed slowly but steadily to defervescence on the thirty-first day; after which it became subnormal, often falling to 96° F. and once to 95.2° F. in axilla to the forty-third day, when convalescence was fully established.

CASE II.—C. D., a gentleman, aged forty-five years, with a gouty history and a sluggish liver, but of temperate habits, returned on the 27th of May, 1890, from a three weeks' fishing tour in Scotland feeling somewhat seedy, which he attributed to having one very hot day drunk a lot of water from a stream which he afterwards had reason to suspect was polluted with drainage.

On May 29 and 30 I saw him at his office, when he complained of loss of appetite, languor, headache, and general malaise. On June 2 I was sent for at 6 A.M., and found his temperature 100° F., which rose in the evening to 101° F. On the 3d he complained of severe pain in the region of the spleen and some vomiting. On the 6th his temperature was 101.6° F. in the morning, and 102.2° F. at night in axilla. On the same day he was seen by Dr. Phillipson, who confirmed my diagnosis of probable "enteric." On the eighth day, at 8 P.M., temperature rose to 104.8° F. in recto, when the first bath was given at 90° F. for fifteen minutes, cooled down to 85° F. For the next few days the temperature was very obstinate and difficult to keep under control, calling for baths every three or four hours; and on the eleventh day it reached 105.4° F. at 3 A.M., and during the eleventh and twelfth days rose to 104° F., and over fifteen times on the thirteenth day the maximum was 104.4° F. at 4 A.M., whence it steadily yielded to the nineteenth day, falling to 98.4° F. in recto at 9 A.M. Thence we had a "spurious remission" to the twenty-third day, with a rise on that date to 101.2° F. at 8 P.M., and on the twenty-fifth day to 102° F. at 5 P.M., when the baths were resumed, and we had to battle with a recrudescence even more obstinate and prolonged than the initial attack, the patient being at his worst on the thirty first day (July 1). Twenty-three records of 104° F. and upward were noted from the twenty-eighth to the thirty-first days, and baths were needed every three hours day and night; but the patient never once was delirious, on the contrary frequently asking for bath when temperature

On the morning of the twenty-seventh day he was suddenly seized with most excruciating pain in right testicle, and as it was not relieved by hot spongio-piline and two 30-minim doses of liquor morphinæ, he was put into a bath at 98° F. for an hour, which relieved him greatly. At 8 P.M. the attack recurred, when the bath for an hour was repeated, after which it passed away.

On the thirty-seventh day the highest recordwas 101.2° F. at 12 P.M., and the lowest 98.6° F. at twelve noon; thence to the fiftyfirst day the daily record ranged between 98.6° and 99.6° F., becoming normal on the fifty-second day, from which he was able to be up daily for a couple of hours on a sofa till the fifty-seventh day, when the temperature rose to 100° F. at 8 P.M. and ranged from 99° to 101° F. till the sixty-third day, with pain and some tympanites over region of coecum, threatening typhlitis, relieved by absolute rest, hot fomentations, and a bath at 95° F. night and morning. On the seventy-first day he was up on sofa again; after seventy-sixth day, when we got 99° F. in the evening, temperature never rose above 98.4° F., and ten days later he was removed to Cullercoats in his brougham.

Note.—This was one of the most prolonged and obstinate cases of enteric that I have ever seen recover, and the pyrexia was most persistent in its recurrence, notwithstanding frequent bathing at a low temperature, the baths being cooled down to 48° F. with lumps of ice frequently; and I am satisfied that, having regard to the patient's age, habit, and history he would, in all probability have succumbed under the expectant treatment; and this view was fully shared by Professor Phillipson, who saw the case frequently in consultation with me.

It is a valuable testimony in favor of the baths to note that throughout we never had delirium, nor dry tongue; that there was comparatively little wasting; that the patient slept soundly between the baths, and that the diarrhoea, though at times troublesome, was never so persistent as to cause any anxiety. The first sound of the heart, though frequently feeble, was never absent.

The rash appeared on the eleventh day coincidently with the highest recorded temperature,—viz., 105.4° F. at 3 A.M. and I P.M. respectively.

Twice during fifteen minutes' immersion the

temperature of bath-water was raised respectively from 60° to 64° F. at 8 A.M. on eleventh day, and from 50° to 55° F. at 10.20 A.M. on thirty-first day.

CASE III.—E. F., a son of last patient, aged ten, was seen by me at Cullercoats (where he had been sent with his brothers home from school on August 1), at 1 P.M. on August 13, when his temperature was 101° F., with a history of being generally languid, tired, and off his appetite for a few days previously, though up and out daily. He was brought home the same day, and at 8 P.M. his temperature in axilla was 103.6° F. On the 14th, temperature rose at 8 A.M. to 103° F.. and 9 P.M. to 105° F. in recto, when a bath at 90° F. was given for fifteen minutes, and renewed regularly and punctually every time the rectal temperature rose to 102.2° F. During the next seven days thirty-three baths were given. Thence to September 13, when the temperature ceased to rise beyond normal and continued so, a bath was given night and morning until the 19th of September, when he was carried down-stairs, and next day was driven in a brougham to Cullercoats.

Note.—This was a simple uncomplicated case, and absolutely under my own control and the care of a splendid nurse, and the bath rules were strictly adhered to free from any interference of timid or hesitating relatives, and the progress was steady and uninterrupted from start to finish.

No rash was observed. There was some abdominal tenderness and moderate tympanitic distention during the second and third week. Diarrhoea was moderate and required no special interference. He was not at any time delirious. He enjoyed his baths, took his nourishment well and wanted more, and was always happy and cheerful, asking the nurse frequently to read to him; in fact, never looked like a typhoid patient, as the nurse observed.

CASE IV.—G. H., eldest brother of the last, aged seventeen years, was home for holidays from a public school at Christmas, 1892. On the 5th of January he-was "toboganning" all day. During the next three days he was confined to the house mostly, and generally "out of sorts," with alternate chills and heats, headache, etc. (attributed to getting a chill when very hot on the 5th). On the 9th at 2 P.M. had a severe rigor and went to bed. When seen at 4 P.M. temperature in axilla was 103° F. and there was some little cough, bronchial râles, and expectoration. Ordered hot bath, warm diluents freely, and a diaphoretic mix-

ture with ipecac, pneumonia being rather indicated.

On the 10th he had a severe attack of epistaxis from 8 to 8.30 A.M., and temperature at 10 A.M. was 100° F., and at 10 P.M. 103° F. in axilla. On the 12th (seventh day) there were four records of 103° F. and upward in the axilla (he objected to temperature being taken in recto), and the diagnosis of enteric became obvious, especially as he had been a little delirious in the night and had had two very loose slimy stools. On the eighth day temperature rose to 104° F. at 4 P.M. The baths, hitherto deprecated, were commenced, the first being given at 95° F. for fifteen minutes, that temperature at once allaying the patient's previous nervous dread of "the cold bath." Up to the sixteenth day the pyrexia was obstinate, rising on several occasions to 104° F. in axilla (or 105.5° F. in recto); thence it steadily declined to the twenty-second day,-98.4° F. at midnight and 99.8° F. at 8 P.M. On twentythird day a soap-and-water enema was given, and repeated every third or fourth day as After thirty-first day temperature was normal or subnormal. Two days later he was lifted on to a sofa, and a fortnight later was permitted to walk down-stairs.

Note.—This patient never was delirious after the first bath, slept well, took nourishment well, and suffered little or no inconvenience throughout except that associated with the necessary confinement to bed. No rash was detected, but several times during the first fortnight a distinct efflorescence, somewhat resembling a mild scarlet-fever rash, was observed on abdomen both by self and nurse.

Note.—In each of my cases the food was peptonized in the following manner: "Bring to the boil one pint of milk or beef- or other tea; stir in thirty grains of bicarbonate of soda, and then one tablespoonful (half a fluidounce) of Benger's liquor pancreaticus."

I must not conclude this paper without a brief reference to a modification, or, rather, extension, of the bath treatment, initiated and successfully practised by Dr. James Barr, of Liverpool, and fully discussed in his book published last year. He keeps the patient in a continuous bath and regulates the temperature of the water so that as long as the patient's temperature in the mouth is over 100° F., that of the bath is kept at 90° to 93° F., while, as the patient's temperature falls towards normal, that of the bath is made to rise coincidentally. Dr. Barr's results show two deaths in seventy-one cases, or a mortality of 2.7 per cent.

The plan appears to possess all the advantages and to be open to fewer objections than the intermittent bath, and it is also more applicable to middle-class patients, because of the less amount of labor and expense incidental to its practice.

Finally, I submit that the case for the bath treatment is simply unanswerable, and that no man can logically deny or cavil at it who has not seen a case so treated, nor, on the other hand, can he fully appreciate its obvious and numerous advantages until he has had an opportunity for such observation.

GATESHEAD-ON-TYNE, August, 1893.

ON THE USE OF PILOCARPINE IN AURAL AFFECTIONS.

A Paper read before the Section of Otology of the British Medical Association, August, 1893.

By G. METCALFE, M.B., B.S., ETC., Surgeon to the Throat and Ear Hospital, Newcastle-oa-Tyne.

DILOCARPINE is used in ear-disease hypodermically and locally, by introducing it through the Eustachian tube into the middle In employing the hypodermic method 1/3 grain is given daily as long as improvement continues, but is given up at the end of a fortnight if there is no improvement. It is safer to begin with a smaller dose,  $\frac{1}{10}$  grain, and increase it rapidly to 1/3 grain. On receiving the injection the patient either retires to bed until perspiration ceases, or lies wrapped up on a couch in a warm room for one or two Sometimes a dose of sal volatile or other stimulant is previously administered to counteract cardiac depression, but is not usually necessary.

In making local applications the Eustachian catheter is passed in the ordinary way, after which, my own method is to inject into the catheter, with a hypodermic or other suitable syringe, about six drops of a 1 to 40 solution of the drug, and then to force it onward by the air-douche until the otoscope demonstrates that a portion of the solution has reached the middle ear; these applications are made twice or thrice a week to each affected ear. subcutaneous injections act by stimulating the intracranial absorbents, and so enabling absorption of morbid products to proceed, by increasing the amount of sweat, cerumen, and nasal and bronchial secretions, and probably those of the middle ear and Eustachian tube, through stimulation of their secretory glands and central nerve-centres. Possibly the labyeffect of the drug commences, and is most marked, in the head, and extends thence downward throughout the whole body. The local applications stimulate the parts to which they are applied.

This method of treatment was first employed by Professor Politzer in cases of labyrinthine inflammation due chiefly to syphilis, and communicated by him at the Milan Congress in 1880. In 1885, Dr. Barr, of Glasgow, reported two cases of extreme deafness, both occurring suddenly; one due to hemorrhage into the labyrinth, cured by eight subcutaneous injections of 3/3 grain, the other due to syphilis of the labyrinth, cured after three weeks of hypodermic medication. Field, of London, and Bronner, of Bradford, also in 1889 reported a series of cases of mixed laborinthine and middle-ear affections, successfully treated by daily hypodermic injections of pilocarpine, persevered with in many cases for six weeks, together with local applications through the Eustachian catheter.

In my own experience I have never been able to obtain such encouraging results in chronic middle ear catarrh, with coexisting internal ear deafness, by the hypodermic method; though many of my patients received the injections daily for six weeks, some improved in hearing power during the first week, but afterwards relapsed in spite of the continuation of the treatment.

In 1891, Professor Politzer published his paper on the employment of pilocarpine in certain affections of the ear and the abuses of this remedy. In this he gave precise indications and contraindications for its use; these have not as yet been improved upon, and are briefly as follows:

Useful in recent affections of the labyrinth, whether syphilitic or not. In cases of extreme deafness, when the tuning-fork is heard longer opposite the meatus than it is on the mastoid (positive experiment of Rinne), and low tones are heard better than high ones, together with other labrynthine symptoms, such as giddiness and inability to hear a watch through the head bones. Rarely in otitis media acuta, where the cavum tympani contains hardened exudative products which resist absorption. In panotitis due to syphilis or other infectious diseases.

When the labyrinth becomes implicated in cases of acute suppuration of the middle ear, in which perforation of the tympanic membrane has occurred.

and central nerve-centres. Possibly the labyrinthine fluid may be similarly affected. The eight drops of a two-per-cent. solution, through the catheter into the Eustachian tube and middle ear.

Injections through the catheter into the tympanum are beneficial in catarrh, with swelling and scanty secretion from the mucous membrane of the middle ear. They are continued for from one to three weeks alternately with Politzerization. Pilocarpine is contraindicated in cases of extreme deafness when the tuning-fork is heard longer on the mastoid than opposite the ear (negative experiment of Rinne), and high tones are heard distinctly, whilst low tones are heard faintly or not at all; also, in chronic progressive sclerosis and chronic catarrh of the middle ear.

It has therefore been proved that pilocarpine does not cure cases of inflammatory syphilitic and hemorrhagic deposits in the internal ear which would not be amenable to any other treatment, though I believe these cases to be exceptions. The following cases are some examples of failures:

CASE I. Syphilitic Disease of Labyrinth.—
T. W., aged thirty-nine. Extreme deafness came on suddenly three weeks ago, with tinnitus, followed by deafness in three hours. Had syphilis two years before, pains in legs one year, and now has serpiginous ulcers on one calf. Has vertigo on turning over in recumbent position.

Treatment.—Pilocarpine, ½3 grain hypodermically, daily for a fortnight, then after a short interval, again for another week. Iodide of potassium and mercury internally, and iodoform ointment for the ulcers. The ulcers healed, but the deafness was not improved.

CASE II. Hemorrhage into Labyrinth of Both Sides.—Wm. B., aged fifty, fell down some steps ten days ago, on left side of head; was totally deaf on both sides for three days; is now very deaf in right ear (side opposite to blow) and slightly deaf in left ear (same side as blow); has a hæmatoma, three inches by two inches, on left temple.

Treatment, October 23, 1892.—Iodide of potassium internally for one week; hearing improved during first three days only; at the end of a week pilocarpine was injected subcutaneously daily for ten days; no improvement either in hearing or in hæmatoma. In December blisters were repeatedly applied, both to mastoid and to temples, when the hearing improved in both ears and the hæmatoma disappeared.

CASE III. Œdema (?) of Internal Ear.— Mary Jane R., aged forty-eight. A case of deafness occurring in the course of Bright's disease, with slight general anasarca. Treatment begun October 20, 1891.—Pilocarpine, subcutaneously, for one week; general improvement, but no improvement to hearing.

CASE IV. Menière's Disease.—James S., aged sixty. Suffers from deafness and tinnitus, with occasional attacks of vertigo, when he feels as if he were turning rapidly round and round, and has to catch hold of some support to prevent himself from falling.

Treatment.—Pilocarpine injection from September 18 to November 20, 1890. No improvement.

CASE V. Labyrinthine Complication of Acute Suppurative Otitis Media.—John B., aged thirty-seven. Has suffered from acute otorrhœa, with perforation, for fourteen days, with deafness, tinnitus, giddiness, and staggering gait, and + Rinne.

Treatment from June 27, 1892.—Boracic lotion for syringing, and pilocarpine hypodermically and per Eustachian catheter. The tympanic suppuration was cured permanently, the hearing power improved, and giddiness and staggering disappeared, but the labyrinthine symptoms relapsed again at the end of a fortnight.

In old-standing syphilitic cases, in cases resulting from fracture of the skull, or from meningitis, I have never observed the slightest benefit from pilocarpine medication. Progressive sclerosis of the middle ear is not amenable to this remedy.

In chronic middle ear catarrh I have had many cases which improved slightly, for a week or so, under subcutaneous injections alone, but afterwards relapsed, and continuation of the treatment was of no benefit. The majority of these cases were not in the least improved by pilocarpine hypodermically.

The other method of using pilocarpine, recommended by Politzer,—namely, by injections through the catheter into the Eustachian tube and middle ear,—has yielded me some favorable results in chronic middle ear catarrh, either with or without labyrinthine symptoms, after routine treatment had failed. I inject into the catheter about 6 drops of a 1 to 40 solution of pilocarpine, and then force it onward with the air-bag; sometimes a little escapes into the pharynx, some of it is lost in the Eustachian tube, and a little is heard to enter the tympanum. A diminution of tinnitus and a slight improvement in hearing power very frequently result.

When from Eustachian obstruction air enters the middle ear with difficulty, after the solution is injected air frequently passes easily and freely. This effect is immediate, and is probably due to the mechanical force of the fluid overcoming the obstruction. The specific effect appears to me to be due to the stimulation of the normal secretion of the Eustachian tube and tympanum, bringing them into a healthier condition, and leading to increased mobility of the conducting apparatus.

I am inclined to think that the good results obtained in mixed middle ear and labyrinthine cases by some observers who have used hypodermic injections and injections through the Eustachian tube, concurrently, have been brought about by the local applications to the Eustachian tube and middle ear, and not to the subcutaneous medication. The following case bears out this opinion.

CASE VI. Chronic Tympanic Catarrh.—Mrs. R—, age about thirty-five, very deaf, can hear loud conversation; and aggravated tinnitus, which is growing worse; has been under prolonged treatment by specialists during last ten years without benefit.

Treatment from March 3, 1893.—Application of pilocarpine to middle ear, through the Eustachian tube, for one month. Tinnitus diminished so as not to cause much distress, and hearing improved so that moderately loud conversation could be heard. At the end of a month pilocarpine was given subcutaneously, as well as by the catheter, for a fortnight; when the tinnitus and deafness relapsed to their previous proportions, treatment was discontinued for a fortnight, and then applications by the catheter only were resumed, and the tinnitus and deafness again improved.

I think that local pilocarpine medication to the tympanum and Eustachian tube is often a useful method of treating chronic tympanic catarrh when routine treatment has failed. Very often when the hearing power is not increased for the watch, patients are positive as to their subjective improvement.

Pilocarpine drops, eight grains to the ounce, with glycerin and water, applied to the external auditory meatus, in dry conditions of the meatus and membrana, often afford some relief, but I have never noticed any good effect when it was given by the mouth.

There is a great difference between the action of different samples of pilocarpine, and this is a matter of considerable importance in practical aural therapeutics. I have often found  $\frac{1}{10}$  grain produce free perspiration, when in the same series of patients  $\frac{1}{8}$  grain obtained from another source has produced no effect.

TOLERANCE TO NITRO-GLYCERINEASILY
ACQUIRED. LIMITATIONS OF USE
OF THE DRUG IN CHRONIC
NEPHRITIS.

By D. D. STEWART, M.D., Lecturer on Clinical Medicine in the Jefferson Medical College.

IN a recent issue of the GAZETTE a case of polyuria is reported in which, nitroglycerin having been prescribed, the patient, in less than a year from first beginning this drug, through acquired tolerance to its effects, was taking about 18 grains daily. As several cases of rather promptly acquired tolerance to nitro-glycerin have been reported in the past year, the recorders of which are evidently unaware of an earlier case in medical literature, I feel constrained to say a word on the subject.

In the *Polyclinic* of August and of December, 1888, I related a case of chronic nephritis, under treatment in the medical clinic of the Jefferson Hospital, in which, in less than six months after an initial dose of r drop of a one-per-cent. solution of nitro-glycerin, such tolerance has been established that a dose of 50 minims of a ten-per-cent. solution (five minims pure nitro-glycerin) was taken *four* times daily, with less effect on vascular tension than the initial dose of  $\frac{1}{100}$  grain.

In my experience, too readily acquired tolerance to nitro-glycerin is not rare, the difficulty being to so carefully and intelligently regulate its administration that, while maintaining a constant slight effect on blood-pressure, the increase in dose is as gradual as possible. In my case, in which 20 minims of pure nitroglycerin were taken daily, the patient had not been encouraged to increase the dose beyond an amount sufficient to produce more than a slight physiological effect,—a feeling of trifling fulness in the head. Yet, despite admonitions as to care in gradual increase, the patient, knowing the nature of his ailment, and believing that great curative power must reside in a drug the name of which suggests so much, and the effects of which on the vascular system were so promptly and powerfully exerted, apparently advanced the dose more rapidly than necessity demanded. Noting this, the drug was several times, at a few weeks' intervals; temporarily discontinued, a much smaller amount being directed to be taken on resuming it than that last used; the increase was also to be very gradual. Notwithstanding this, and careful directions as to the best mode of taking nitro-glycerin, doses of 50 minims of a ten-per-cent. solution four times daily were soon reached and continuously taken without

the occurrence of any headache whatever, but slight transient flushing of the face, and no very marked effect on arterial tension, as shown by the sphygmograph.\*

Prescribing nitro-glycerin frequently, I often encounter cases in which I believe similar inconvenient doses could be as promptly reached, with as little systemic effect as in the case just narrated, were a too rapid increase to be permitted. Where it is desired to employ this drug over a considerable period for its effects on blood-pressure, the best rule of administration, in my opinion, is to so proportion the dose that the intervals are comparatively short,-never less than four times daily,and the amount, though sufficient to produce some subjective or objective effect, never more than that just necessary to cause the slightest feeling of fulness in the head or to slightly quicken the pulse; these last are certain indications that other physiological effects desired occur. Unless unusual susceptibility exists, if enough is always taken to produce a more marked immediate result, such as flushing and slight headache, tolerance is soon acquired, and a quantity may be early reached altogether impracticable of administration. rather rapid increase seems necessary to maintain a constant effect, an equally important point is to temporarily discontinue the drug for two or more days, at intervals of two or three weeks. On its resumption a much smaller initial dose will be required to produce physiological effects than that last taken. So used, inconvenient tolerance will be less likely to occur, and the employment of strong solutions, the handling of which is not altogether free from danger, will be less necessary. It must be remembered that nitro-glycerin has, so far as we know, absolutely no action in cases of chronic nephritis apart from its effect upon vascular tension. It is only indicated in those cases in which the blood-pressure is persistently markedly high, and in which consequences, such as cerebral hemorrhage or valvular disease of the heart, or stretching of its cavities, are to be feared. Cerebral hemorrhage is a late complication. It requires for its production not only vigorous heart-action, but also weakened (generally aneurismal) cerebral vessels. Valvular disease of the slow sclerotic form, commonly mitral, is not infrequently encountered in cases of granular kidney of long duration in which cardiac hypertrophy has kept pace with prolonged arterio-capillary resistance. As Mahomed long ago showed, the pathological conditions underlying the cardiac condition in these cases is oftener recognized than that in which a leaking mitral has resulted from an overstretched ventricle. These various more or less remote sequences of persistent raised arterial tension—save perhaps the last, to prevent which both nitro-glycerin and a heart-tonic may be required—are late phenomena, and usually less to be dreaded than certain more immediate results from undue lowering of vascular tone.

It must not be forgotten that a moderate amount of tension is probably actually conservative. It seems to be recognized that those cases of chronic Bright's disease in which tension is persistently low from the outset are actually of much more gravity than the commonly-observed variety with raised vascular tone, and when arterio-capillary resistance shows a tendency to fail voluntarily, scanty urine, with more marked albuminuria, and dropsy may be expected.

In the administration of nitro-glycerin these points must be borne in mind, and the drug not merely prescribed because the case is one of chronic nephritis. Much more was originally expected of nitro-glycerin as a remedial agent in conditions of persistent high tension than has been realized. I now employ it less frequently in such cases than formerly, endeavoring, at first at least, to bring about the same effect by limiting the nitrogenous intake and maintaining a free action of skin and bowels. The influence of constipation in heightening blood-pressure is well known, but this fact is not always applied in therapeutics, and the modifying effects of diet are even less attended to. Nitro-glycerin and the nitrites temporarily lower pulse-tension without influencing the The latter, if not arterioever-present cause. capillary fibrosis,—then little controlled by any measure,—is nitrogenous waste in the blood. Free action of the emunctories tends to overcome this, but the fountain-head must be sought for permanent relief. The remarkable effect that may be produced by diet on arterial tension in granular kidney is beautifully shown in the accompanying sphygmo-

The case,—a male, aged thirty-one,—when originally seen some months before obtaining the first tracing, presented signs of persistent high tension without indications of vascular fibroid change. No tracing was then taken, though pulse-tension was carefully noted. Sphygmogram I. shows a quite normal pulse.

<sup>\*</sup> See *Polyclinic*, 1888, p. 172. A dose of 5 minims of pure nitro-glycerin (in alcoholic solution) was administered by myself before Professor Da Costa and the class in the clinic, so that there could be no mistake as to amount.

The tension is not raised. The tracing is not at all indicative of a kidney lesion. The upstroke is vertical, the tidal wave slight and below a line drawn from the apex of the upstroke to the aortic notch. The pressure was one and a quarter to one and a half

of the above. This case is also one of chronic nephritis. The tracing shows markedly the effect of a non-nitrogenous diet. This patient has eaten no meat, fish, or eggs for over two months. On a nitrogenous diet he has a typical high-tension pulse.

#### SPHYGMOGRAM I.



J. B. June 2, 1893. Pressure, 11/4 ounces. Non-nitrogenous diet two months.

#### SPHYGMOGRAM II.



J. B. June 9, 1893. Pressure, 13/4 ounces. Only pressure giving satisfactory tracing. Meat diet one week; meat once daily.

#### SPHYGMOGRAM III.



W. B. June 10, 1893. Pressure, 13/4 ounces. Vegetable diet two months.

ounces, a greater amount extinguishing the pulse. A number of tracings taken with slightly-varied pressure gave a similar result. The pulse was 74 to 76; tracing and pulse taken sitting. The patient had been on a non-nitrogenous dietary for two months; no meat, fish, or eggs had been eaten.

Sphygmogram II. is a quite typical high-tension (kidney) pulse. It is one of a number of tracings taken a week after the first, all showing an identical condition. The upstroke is a trifle less vertical than in Sphygmogram I.; the tidal wave is well pronounced, a portion of it occupying a position above a line drawn from the apex of the line of ascent to the aortic notch, which latter is placed high. The pressure employed was one and three-quarters to two ounces, no pressure less than one and threequarters ounces developing the pulse. The latter was 60; pulse and tracings taken sitting. Conditions other than diet were the same at the time of developing each sphygmogram. During the seven days the patient had eaten meat once to twice daily in addition to ordinary diet.

Sphygmogram III. is from a younger brother

In both cases urea and uric acid excretion are much diminished. There are well-marked symptoms of chronic Bright's disease. Casts are present in the urine, but albumin is absent.

These sphygmograms graphically and beautifully illustrate what may be accomplished in lowering vascular tone by diet without a resort to nitro-glycerin.

2620 NORTH FIFTH STREET, PHILADELPHIA.

THE NATURE OF VACCINE IMMUNITY.
FROM THE PATHOLOGICAL LABORATORY, UNIVERSITY COLLEGE.

By S. P. KRAMER, M.D., AND RUBERT BOYCE, M.B., M.R.C.S.,

Assistant Professor of Pathology, University College, London.

IT seemed to us to be desirable to apply our knowledge of experimental immunity, as it exists to-day in the case of certain infectious diseases whose specific causes are known, in investigating the nature of the immunity produced by inoculation of cow-pox.

We know that when immunity to infectious disease has been experimentally induced in animals, the serum of their blood possesses immunizing and even curative powers against the diseases in question, when injected into other animals.

The literature of the subject, as far as it concerns vaccinia, is as follows: Chauveau injected into the jugular veins of two young horses five hundred grammes and one thousand grammes, respectively, of the blood obtained from a horse in full vaccine eruption. Typical papules were subsequently produced in both cases by inoculation. Raynaud obtained similarly for the most part negative results. Straus, Chambon, and Menard transfused a large quantity of blood (five thousand five hundred grammes) obtained from a calf seven weeks after vaccination. A vaccine eruption developed after vaccination.

In our first series of experiments we have injected non-vaccinated calves with sterile blood-serum obtained from vaccinated calves. The animals so treated were vaccinated with active vaccine lymph. Absolutely no local reaction was observed at the point of injection. The total amount injected varied from 3.04 to 18.94 cubic centimetres per kilo of animal.

#### EXPERIMENTS.

CALF I.—Weight, 136.4 kilos; serum injected, four hundred and fifteen cubic centimetres; amount per kilo, 3.04 cubic centimetres; result, no immunity.

CALF II.—Weight, one hundred and fifty kilos; serum injected, twelve hundred and forty cubic centimetres; amount per kilo, 8.27 cubic centimetres; result, immunity.

CALF III.—Weight, one hundred and thirtyfive kilos; serum injected, twelve hundred and fifty cubic centimetres; amount per kilo, ten cubic centimetres; result, no immunity.

CALF IV.—Weight, one hundred and twentyone kilos; serum injected, thirteen hundred and eighty cubic centimetres; amount per kilo, 11.8 cubic centimetres; result, no immunity.

CALF V.—Weight, one hundred and thirtytwo kilos; serum injected, two thousand five hundred cubic centimetres; amount per kilo, 18.94 cubic centimetres; result, no immunity.

From these experiments it may be seen that in four animals the injection of large quantities of the serum obtained from calves ten to four-teen days after vaccination had no immunizing effect. The different result obtained in Calf II. we cannot explain. We have commenced a second series of experiments in which the serum is used which has been taken from calves in full eruption. The result in our first

experiment has in this case also proved negative in spite of the injection of fourteen hundred and eighty-five cubic centimetres.

### THE TREATMENT OF CERTAIN FORMS OF FRACTURE.

PHELPS (New York Medical Journal, vol. lviii., 1893), in a general discussion upon the treatment of fracture, strenuously insists that there is always possibility of imperfect union, and holds that usually the danger can be averted by sufficiently early recognition and adequately careful treatment. If firm, accurate, undeviating, and persistent coaptation be made, osseous union will seldom fail in uncomplicated simple fractures. If in fractures of the shaft of the humerus the elbows were always properly supported; if in fractures of the shaft of the femur the fragments were always properly reduced; if all fractures, after the application of proper retentive apparatus, were left without unnecessary disturbance, the opportunities for study in the field of ununited fractures would be seriously curtailed.

In operation for ununited fractures the choice lies between drilling, wiring, and resection of the ends of the fragments, and of these the former is the one to be preferred in suitable cases. In case of failure, drilling will not prejudice the resort to other measures. The femur is of all bones least suited to its employment. In case by any chance purulent inflammation follows, it is liable to be diffused along the muscular planes, and to involve loss of limb, or even life itself. With one such accident the author is familiar, though the patient ultimately recovered.

#### THE TREATMENT OF VULVAR VEGETA-TIONS BY PURE CARBOLIC ACID.

DERVILLE, of Lille (Journal de Médecine et de Chirurgie Pratiques, tome lxiv., 64 année, 4 series), treated a case of vulvar vegetations covering both the anus and the vulva, and reaching the size of a man's fist. He cured this enormous growth by local washing with pure carbolic acid. The whole surface of the vegetations was painted with the pure acid; this application was repeated about every fourth or eighth day. The treatment occasioned no pain, but frequently caused erythema, vesiculation, and excoriation of the surrounding parts. This is prevented by the application of vaseline to the healthy skin.

## The Therapeutic Gazette

EDITED BY
H. A. HARE, M.D.,
GENERAL THERAPEUTICS.

With special departments under the charge of G. E. DE SCHWEINITZ, M.D., OPHTHALMIC AND AURAL THERAPEUTICS,

AND
EDWARD MARTIN, M.D.,
SURGICAL AND GENITO-URINARY THERAPEUTICS.

#### GEO. S. DAVIS.

Medical Publisher, Box 470,

Philadelphia, 714 Filbert Street,

DETROIT, MICH.

#### SUBSCRIPTION RATES FOR 1893.

THERAPEUTIC	Gazette	(post	tage	inclu	ided)	\$2.00
THERAPEUTIC	Gazette	with	MED	ICAL	AGE	2.50
THERAPEUTIC	GAZETTE	with	WES	TERN	MEDICAL	_

THERAPEUTIC GAZETTE with AMERICAN LANCET 3.25
THERAPEUTIC GAZETTE with AGE and LANCET... 4.00

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136 Gower Street, London. Price 10s. Remittances may be made either by Postal Order or Stamps.

Price to Foreign Subscribers direct (postage included), \$2.50 (10 shillings). English postage-stamps received on remittances.

Editorial communications should be addressed see South Fifteenth Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

Authors will receive reprints in pamphlet form, without charge, provided the request for them be written on the articles sent.

Business communications should be addressed to the Publishers.

#### Leading Articles.

#### ANTISEPSIS IN OPHTHALMIC SURGERY.

THE literature of the subject of antisepsis in its relation to ophthalmic work is an extensive one, and is constantly receiving additions as surgeons here and there contribute their experiences, sometimes the result of careful bacteriological research or clinical observations, and sometimes, unfortunately, the result of precipitate adulation of a new or favored germicidal substance.

Recently, Nuel (Revue Générale d'Ophthalmologie, May 31, 1893) and other of the French surgeons have contributed another quota to this subject, an abstract of which appears in our Progress columns. Nuel's directions for preparing the patient are excellent, and embody the ordinary rules which an abundant experience has proven to be well formulated. It is interesting to note that, although he distinctly

deprecates the use of an antiseptic within the conjunctival sac which, either from its inherent nature or because of undue concentration, might irritate the conjunctiva, he advises and employs an aqueous solution of sublimate (1 to 2000), the strength of which he occasionally, but evidently not with a perfectly clear conscience, reduces to 1 to 3000, or even 1 to 5000. Nuel's experience of what constitutes an irritating strength of sublimate when applied to the conjunctiva must differ widely from that of many surgeons on this side of the water. His belief in the certain antiseptic properties of this drug, under these circumstances, is not shared by many experienced observers and experimenters, and it is not "universally conceded" to be the best of antiseptics. structive to contrast his recommendation that the sublimate irrigations of the conjunctival sac shall be repeated three or four times daily during two or three days before the operation, with the advice of America's most distinguished cataract operator: "Anything that produces a congestion, be it exposure to dust, lack of sleep, irritants such as corrosive sublimate or nitrate of silver in a strength to cause hyperæmia, lymphatic exudation and exfoliation of epithelium,—i.e., food for bacteria,—should be strictly kept from the eye for days previous to the operation." We are impressed with the belief that bichloride of mercury (1 to 2000) constitutes a strength to cause the very conditions which Dr. Knapp so earnestly seeks to prevent, and we cannot regard Nuel's advice in this particular worthy of acceptance, although we fully sympathize with his doctrine that the ideal substance for disinfection of the conjunctival sac is one which, while actively antiseptic, is without deleterious effect on the tissues.

With other recommendations in this communication we are fully in accord, and particularly with the injunction to prevent the contact of the sublimate lotion with the eye or conjunctiva after the operation (extraction) is begun. All necessary irrigation is done with a physiological salt solution, sterilized by boiling,—a solution which he thinks, and with good reason, is preferable to boracic-acid lotion.

He rejects sponges and also absorbent cotton as aids in removing blood from the area of operation, thinking that aseptic gauze answers every purpose, and there can be no doubt that bits of gauze prepared by sterilization with steam are neater, cleaner, safer, and in every way more desirable than cotton; no one is inclined to employ sponges, which have long since been relegated to the background.

We cannot review all of the points in antiseptic technique which are carefully considered by Nuel, and which are more fully detailed in the Progress columns. One point, however, to which he makes reference deserves special mention,-viz., what he describes as his criterion of predisposition on the part of the eye to infection. After all has been done to render an eve safe, especially if there has been hyperæmia of the conjunctiva, or lachrymal disease, the question arises. Have the methods been sufficiently thorough? Is the eye sufficiently aseptic? According to Nuel, an affirmative answer may be given if an aseptic bandage, which has been applied for two days, is found on removal unstained with secretion and the eve dry and pale. If, on the other hand, there is notable secretion, or the eye becomes congested and the conjunctiva leaky under this test, then operative measures must be postponed, preparatory treatment continued for some days longer. and the test reapplied until satisfactory results are obtained. This practice is one we have long adopted, in suitable cases, with abundant satisfaction, and can testify to its value. Haab, who closes with the galvano-cautery the canaliculi of an eye in which he suspects the lachrymal passages, and thus, he believes, shuts off a source of infection, uses this test to demonstrate the efficiency of his method. According to him, if both eyes are bandaged, the one having been prepared in this way and the other not, after twenty-four hours the dressing of the first eye will be found dry, while secretion, mucus, etc., will be present in the corner of the second eye and on the piece of lint or gauze which has covered it. Not many surgeons are willing to adopt Haab's heroic measure of excluding the tear-passages from connection with the conjunctival sac, but his recommendation to apply a bandage-again lauded by Nuel and employed by many operators-to test the predisposition of an eye to accumulate secretion, and consequently to enhance the danger of infection of a corneal wound, is worthy of general adoption.

SOME FACTS IN REGARD TO THE ADMINISTRATION OF IRON.

EVERY one who makes a careful study of therapeutics must realize that it is the condition of the individual case rather than the real disease from which he is suffering which indicates the use of this or that remedy. This law of therapeutics finds exemplification in the subject of the administration of iron,

since the various preparations of iron act in different ways in different stages of disease. Perhaps the most common mistake which is made in the prescription of iron is its administration to that indefinite class of cases which the doctor is apt to classify as suffering from "debility," because he is unable for one reason or another to discover the true cause of their condition. In other words, it is the routine practice of many physicians to employ iron as a tonic wherever they find that there is derangement of function, which they believe to be due to lack of tone, or torpidity. While iron is, above all other remedies, the most valuable in certain conditions associated with the blood, whether these conditions consist in alterations of this fluid or in the presence in it of septic material, it is not a remedy which possesses in itself the power of adding tone to the organism or of stimulating it to increased exertion. It probably does not even have the transient stimulating effect which is possessed by many of the simple bitter tonics. and does more towards disordering the digestion of many of those who take it than is commonly believed. In the first place, we believe that it is in the anæmia which is due to a lack of hæmoglobin, rather than that which is due to a lack of corpuscular elements of the blood, that iron finds its chief usefulness; and, secondly, we are confident that a common mistake is its administration in too large doses. Iron is a remedy which is present in very small quantity in the human body; the normal amount is preserved in the ordinary individual by the trace which it takes in his body, and compared with this trace the ordinary doses of iron are simply enormous. Some years ago the writer of this editorial made a comparative study of the influence of iron in small and large doses on twelve cases of anæmia which, as far as possible, resembled each other in every way. Six of these people received 2 or 3 grains of reduced iron three times a day, and the remaining six received 1/3 grain three times daily. The six that received the small doses had far less disorder of digestion than those which received the large doses. Their recovery was as prompt as those receiving the large doses, if not more so, and the attending physician had the satisfaction of knowing that he was accomplishing a good result with a small quantity of medicine, instead of using large amounts of it. It is true that in some conditions in which there is gastro-intestinal disorder associated with the formation of gas arising from fermentation or decomposition, and in which the anæmia is largely due to destruction of the constituents of the blood by the absorp-

tion of poisonous materials from the intestine, large doses of iron are absolutely neces-Necessary, because in these instances only a small quantity of iron is absorbed, and the greater amount of it forms a sulphide of iron, or other compound, with the contents of the intestine. Where we have, therefore, a destruction of the iron in large amount it may be necessary to give it in full dose; but, unless this is the case, we are firmly convinced that 1/2 grain of reduced iron will in most cases give better results than 3 grains. It will be found under these circumstances that constipation, which we all know is a frequent sequence of the administration of iron, more rarely occurs, and, as a result, that the general health of the patient is improved. We also avoid in this way the so-called iron headache, which in some cases is produced by constipation, and in others so rapidly develops if there exists a condition which we call, for lack of a better term, "the rheumatic or gouty diathe-In other words, gouty and rheumatic persons suffering from anæmia, who suffer from severe headaches under the ordinary administration of iron, may obtain much benefit from this drug if small doses, which will be absorbed, are employed in preference to the large ones, which are not entirely absorbed. But even this hope sometimes proves delusive. We believe that, unless the physician desires to get the astringent influence of the sulphate of iron, he will get good results from small doses of the sulphate of iron in exactly the same way that he gets good results from small doses of reduced iron, and that it is only when the diarrhœa accompanies the anæmia that it is necessary to administer large doses of sulphate of iron for both its hæmic and astringent influence.

PARENCHYMATOUS INJECTIONS IN ACUTE INFLAMMATORY AFFEC-TIONS OF THE TONSILS.

CCASIONAL reports as to the beneficial effects to be derived from deep injections of powerful antiseptic solutions in cases of infective inflammation of the tonsils have appeared certainly for the last ten years, but have attracted little attention, mainly because the physician or surgeon reporting such cases was so placed that his experience was necessarily limited, or was so little known that his conclusions, whether favorable or unfavorable, were not accepted by the profession at large. In the last few years, and particularly in relation to diphtheritic inflammations, these re-

ports have been multiplying, and have been almost unanimously in favor of this method of treatment. Lately, Von Ziemssen, of Munich, strongly advocated these injections before the Twelfth German Medical Congress, held at Wiesbaden in April of this year. He called attention to the fact, long since known, that there is constantly found in the crypts and lacunæ of the healthy tonsil the micro-organisms of the common septic processes. long as the epithelial lining of these follicles is intact these micro-organisms are innocuous; but when, from acute congestion incident to cold, or excited by the poison of scarlet fever, or occasioned by diphtheritic infection, this epithelial lining is broken through, or its normal resistance is greatly lessened, these microorganisms penetrate into the substance of the tonsil and excite their characteristic virulent local and general effects. Von Ziemssen employs the carbolic solution recommended by Taubner and Heubner. In cases of catarrhal tonsillitis he injects about 8 drops of a two-percent. carbolic solution. The aching and the pain on swallowing disappear almost immediately, and the temperature quickly drops to normal. Usually one injection into each tonsil is sufficient to definitely stop the suppurative process; occasionally two are necessary. The effects of these injections were so constant, and the relief from the subjective symptoms so immediate, that this treatment must be regarded as truly abortive in its effect. The injections are readily made, occasion almost no pain, can be given by an ordinary hypodermic syringe, though they are more conveniently administered by means of a syringe provided with a long needle, and they never excite undue inflammatory reaction.

Von Ziemssen employed this method of treatment in all forms of tonsillitis presenting themselves to him, including those incident to scarlet fever and diphtheria. In all his general results were favorable.

Sahli, in commenting upon Von Ziemssen's statement, is entirely in accord with that author as to the favorable effects of the injection. While commending carbolic acid, he personally uses the iodine trichloride, preferring this antiseptic on account of its powerful germicidal effect and its relatively slight toxicity.

Behring's experiments showed that, after infecting an animal with diphtheria, cure took place when the iodine trichloride was injected near the infected area. These experiments had weight in inducing Sahli to choose this remedy. He injects once or twice daily a two-tenthsper-cent. watery solution of the drug, driving

it, a drop or two at a time, into various parts of the inflammatory swelling. In diphtheritic cases injections were made into and beneath the pseudo-membrane and into the underlying connective tissue. He states that, especially in diphtheria, the local and general amelioration of symptoms is frequently astonishing.

Heubner reiterates his opinion expressed seven years ago as to the good effects of this treatment. He states that he has employed the method for twelve years, and never had occasion to regret so doing. He has treated several hundred cases of scarlet fever in private practice, and in the last year and a half treated fifty-one cases in the hospital; twenty-two of these cases presented grave diphtheritic lesions of the throat; fifteen of these throat cases were cured. Usually about fourteen of the injections were necessary before final cure took place. In one case unusually severe thirty-five injections were necessary.

He states that these injections are more easily applied than either gargles or paintings of the throat, and that, beyond a slight burning, no pain is occasioned.

Von Ziemssen and his colleagues have probably given this method of treatment the strongest endorsement it has received, and as a result of their teaching it will no doubt be employed more frequently than ever before. That the results cannot always be successful need scarcely be said. Indeed, it is difficult to explain why any success whatever should follow these injections, since sections of tonsils show that in many cases, if not in the majority, there are multiple foci of suppuration, and that in severe cases infection is spread wide of the tonsil itself. Even when there is a single focus of infection which has advanced so far that distinct symptoms are excited, it is only by luck that a small amount of injection could be driven into it, and even when this takes place it is hard to understand how this injection can destroy all the germs in and about this focus. On the contrary, it seems reasonable to suppose that, as a result of inflammatory reaction, the extension of disease would be even more active than before the treatment. Still, proof is more positive than theory, and this method of treatment has been advocated by careful men, whose reputa-. tions for scientific accuracy are world-wide. Again, similar methods of treatment have been successful in the management of lymphatic glands in other parts of the body,—viz., the iodoform injections in the treatment of tubercular adenitis, and the benzoate of mercury injections for the cure of bubo. It is a method worthy of trial, but it must be borne in mind

that prompt subsidence of beginning acute tonsillitis should not necessarily be attributed to the treatment, since spontaneous resolution is by no means uncommon.

Reports on Therapeutic Progress.

THE THERAPEUTIC VALUE OF CHLORIDE
OF METHYL.

After noting the literature of this remedy, Dr. Hertmann (*Therapeutische Monatshefte*, April, 1893) relates his own experiments in its use, tabulating twenty-nine cases. In fifteen cases of sciatica, three improved, there were two failures, and ten cures. Three cases of intercostal neuralgia, two of pleurodynia, and one case each of lumbago and coccygodynia were cured. Four cases of rheumatism, partly of long standing, were cured.

The chloride of methyl is sprayed upon the diseased limbs. Having frequently used it during a year, Hertmann believes it will be a valuable aid in the treatment of neuralgia and other painful diseases.

#### JAMBUL FOR GLYCOSURIA.

DR. VIX (Therapeutische Monatshefte, April, 1893) found syzygium jambolanum too high-priced for practical purposes, especially as the small doses commended by English physicians were only of temporary value. He then tried a jambul preparation made from the rind instead of the fruit itself, which is much less expensive. He tried this in the treatment of twelve cases.

The first case was a man, fifty-six years of age. suffering with chronic eczema of considerable extent. His two brothers had died of diabetes. There was seven per cent. of sugar in the urine. He was ordered a strict antidiabetic diet and 101/3 drachms of extract syzygium jambolanum from the fruit, daily. At the end of four days the urine was free from sugar, and he remained so for two years, the urine being examined every month. He died recently of influenza, pleuritic exudation, and heart-weakness. At the time the jambul treatment was begun, the eczema soon disappeared without any local treatment. His diet was only strictly antidiabetic at first. In all he took about seventytwo drachms of jambul extract of both kinds.

The second patient was a man of about the same age, who had suffered for three years from slight glycosuria, for which he had visited various springs. He had appeared to be free from

sugar for several months, when attacked with influenza in January, 1892. To this was added a capillary bronchitis, much spread over both lungs, with small patches of pneumonia and great difficulty in breathing. The existing weakness made a fatal termination imminent for a long time. On the 2d of February a new complication was noted; the urine contained a small quantity of albumin and nearly three per cent. of sugar. The amount passed in twentyfour hours was thirty drachms. He was given 12 drachms of fluid extract syzygium from the rind. On the next day the amount of sugar was reduced to one-half per cent. When the dose was diminished the sugar increased; but after ten days on the above dose both albumin and sugar had gone. The whole condition then rapidly improved, the patient recovering his usual strength, and remaining free from sugar during the following months by observing a strict diet. Vix considers the jambul a direct life-saver in the above case, for had the secretion of sugar continued, it would soon have exhausted the patient's strength.

Vix used the hull extract in ten other cases, some of them severe chronic ones. He found that if the patients obeyed the dietetic directions, it was possible to free the urine from sugar in a few days as well as to greatly improve the general condition. It should be remembered that the secretion of sugar is not a separate disease, but simply a symptom of diseases, so that the jambul is not able to produce a radical cure without the use of other remedies. But it is a valuable aid, rendering patients able to work for many years.

Vix did not find any disturbing action, even when it was used in large doses for a long time. He gives it upon a full stomach. A few times he noted severe diuresis of short duration after 10½ drachms had been given.

#### THE TREATMENT AND CURE OF LEPRA TUBEROSA WITH EUROPHEN.

DR. JULIUS GOLDSCHMIDT (Therapeutische Monatshefte, April, 1893), after speaking of the characteristics of leprosy, its local and very slow development, and the apparent lapse of months and years without any perceptible change in the spots, tells of his efforts to effect a cure by local treatment.

He used europhen in several cases with varying results, and finally achieved with it the first cure which has rewarded the careful efforts he has made for twenty-five years past. The disease manifested itself in the form of tubercular formations at the left of the mouth, on

the left upper lip, chin, right eyelid, on the tip of the nose, and on the right upper and the left under side of the thigh. His treatment was to rub all of the leprous spots and their surroundings with a five-per-cent. oil of europhen. Three times a day all the thickened and all the suspicious spots were gently rubbed for five minutes, and the oil left upon them, so that they were in contact with it day and night. The woman continued this treatment faithfully for ten months, it being only interrupted at the birth of a healthy child. Goldschmidt was himself surprised at the result. The improvement was noticeable at the end of four weeks. At the end of fifteen months the eyelids are entirely normal, so that the original position of the disease is no longer to be seen. The large leprous spot on the upper lip and at the corner of the mouth, as well as the smaller one on the chin, are entirely healed; the skin is of a pale-brown color and slightly depressed as compared with the surrounding surface. Bacilli are no longer to be found. The tip of the nose is still somewhat red and swollen, but from here, too, the bacilli have vanished. The spots on the lower extremities are fully healed. The woman's general health is excellent, and has never been disturbed during the long course of the treatment.

## THE TREATMENT OF CONSTIPATION AND SOME AFFECTIONS OF THE BOWELS WITH LARGE ENE-MAS OF OIL.

PROFESSOR FLEISCHER (Medicinisch-Chirurgisches Centralblatt, March 10, 1893) thinks that atonic and spastic constipation are too often treated without discrimination. He regards oil as the best article to use in the treatment of spastic constipation. His method is the one devised by Kussmaul. As the object is to introduce the oil as high as possible in the colon, for a grown person from 131/2 to 17 fluidounces of oil should be given as an enema, the patient lying upon his back, with a stiff cushion from eight to ten inches high under the pelvis. To prevent thermic and mechanical irritation of the mucous membrane of the large bowel, which would cause peristalsis, the oil used should be warmed to the temperature of the body and flow in slowly at slight pressure.

The oil is usually from fifteen to twenty minutes in entering the bowel.

Professor Fleischer does not expect a single enema of oil to suffice, but has it repeated on several succeeding days. Sometimes the oil acts upon the cæcum the second day, but more frequently not until the third day or later.

This maximum having been reached, the oil enemas need no longer be used daily, and the quantity of oil used may also be reduced to one-half.

In local affections of the descending colon, the sigmoid flexure, and of the rectum still smaller quantities of oil suffice.

Defecation seldom follows immediately; usually one or more hours intervene; occasionally it is necessary to use an enema of water three or four hours after the oil. When the oldest fæces are fully removed, a further use of the oil is followed by thin stools often of bile color; this is an indication that the maximum of the oil's action has been reached. The uncomfortable sensation in the bowel experienced by many people is sometimes relieved by lying absolutely quiet upon the back; in other cases, no relief is found until defecation occurs and some of the oil has left the bowel.

The quality and chemical preparation of the oils are so varied that care must be taken to make use of as pure and clean an oil as possible. Either pure olive oil or poppy or sesame oil may be used. Impure oil causes the patient great discomfort.

The action of the oil upon the large bowel may be briefly summed up:

- 1. Softening and loosening the fæces.
- 2. Quieting and non-irritating, but, after a longer stay in the bowel,
  - 3. Exciting peristalsis and evacuation.
  - 4. Preventing absorption.

Professor Fleischer thinks the oil enemas specially valuable for regulating the bowels of anæmic and undernourished individuals.

#### CERTAIN NEW VIEWS CONCERNING THE DIAGNOSIS AND TREATMENT OF ROUND ULCER OF THE STOMACH.

The title heading this abstract is that given by Boas in the Medical Record for June 17, 1893, to a thorough discussion of round ulcer of the stomach. In conclusion, he states that as a therapeutic measure must be mentioned the well-known ulcer treatment of Leube and Ziemssen. It depends upon the principle of rest in bed, hot applications, and the administration of Carlsbad salts or water, in addition to restrictions in diet. This form of treatment has been practised mainly in Germany, and very correctly. The instances are rare in which hot applications are not as well borne as the so-called hydrotherapeutic forms. Of course, the treatment described above does not prevent re-

lapses, for, although we are able in many cases to heal the local ulcer, we are not able to exert any influence on the as yet unknown predisposition. It is not possible to carry out in all cases the methods of Leube-Ziemssen, for several weeks' confinement to bed and room must necessarily demand a sacrifice, especially from those belonging to the working-classes, which but few persons are, in fact, able to make. In these cases Boas has been in the habit for over two years of prescribing a systematic nitrate-ofsilver treatment. The use of nitrate of silver in the treatment of gastric ulcer is not new. Autenreith utilized this remedy in 1829, though only for cardialgia. It has been given mainly in pill form; rarely have solutions been prescribed. The opinions concerning the healing powers of this remedy on the ulcer itself vary considerably; but few modern authors have recommended the use of this substance as earnestly as its merits warrant.

Of course, in order to have results, the doses must be markedly increased. The author begins with solutions of .2 to 120, of which a tablespoonful is given three times daily; in the second week he increases to .3 to 120, and, if then the most prominent symptoms of the ulcer have not disappeared, he increases to .4 to 120. In all cases four bottles of the solution are to be taken. The drug should be diluted in a wineglassful of water and swallowed on an empty stomach. In order to free the mouth of the metallic taste, the patient is advised to gargle with a weak salt solution until the water is no longer cloudy. He never prescribes nitrate of silver in pill form. In order to determine the curative effect of nitrate of silver, he has had systematic algesimetric measurings carried out (in marked cases of gastric ulcer) in the painful areas of the epigastrium and dorsal regions. and convinced himself of the gradual disappearance of pain in these regions. He then gives curves to illustrate the nitrate-of-silver treatment obtained by means of the algesimeter. The pain in the pressure area diminishes gradually after the treatment with nitrate of silver has been instituted; that in the dorsal area Seldom is this remedy not well quickest. borne, or, in fact, not borne at all. The appearance of diarrhoea—one of the most frequent annoyances—is in so far not unpleasant to the patient, inasmuch as constipation has previously existed, at least in most instances. The writer regards the nitrate-of-silver treatment, as described above, as an exceedingly efficient and prompt method in the treatment of this condition. Especially is it to be recommended in cases where an ambulatory treatment must, on account of special reasons, be carried out.

Such rebellious and resistant forms of round ulcer of the stomach are sometimes met with as to try sorely the patience of both physician and patient. Especially is this the case when, after a confinement to bed for several weeks. together with rigorous restrictions in diet, the patient is still tortured with violent pains. In such cases we hardly know who is in the most unpleasant position, the physician or the patient. For such persistent and intractable cases Boas finds the method of value which was recommended by McCall Anderson, and Donkin, of England, some years ago, for the treatment of ulcer in general,—that is, a ten to fourteen days' absolute abstinence from food, with only rectal alimentation. The latter is pursued in such a manner that the patient receives one injection every three hours, consisting of two hundred and fifty grammes of milk (one-half pint), two egg yolks, one teaspoonful of table-salt, one tablespoonful of red wine (or port wine or whiskey, etc.), one tablespoonful of flour. The whole is heated, and in the form of an injection is passed slowly into the bowel by means of a Hegar's tube. It is remarkable how quickly, by means of such an injection, the feeling of hunger is relieved. Last summer the author treated a physician for a stubborn form of gastric ulcer in which water injections alone were not sufficient to relieve the feeling of hunger, but certain nutrient substances which might be absorbed into the blood were necessary for this purpose. The treatment spoken of above was carried out by the English authors for three weeks. Boas only employs it from ten to fourteen days, and finds that sufficient. In all cases the spasmodic torturing pain disappeared almost as quickly as the treatment was instituted. The great thirst which appears at times can be relieved by soda or Vichy water. He uses no general medical treatment in his treatment, though there is no objection to the nitrate-of-silver method in connection with the abstinence method. After ten to fourteen days fluids may be first given, and soon thereafter solids. The writer has treated about a dozen cases of stubborn forms of ulcer of the stomach according to this method, and has had good results with all, with but one exception. However, he adds, that even after the use of this heroic method, for reasons already given, relapses may occur. The patients rapidly recover from their wearisome treatment, and if they can be prevented from indulging in excesses of food, this method proves invaluable in those cases in which other methods have proven fruitless. Inasmuch as it is not the object to go into details regarding the treatment of gastric ulcer, he does not discuss the value or uselessness of bismuth and morphine in this condition. He believes, however, that such drugs as morphine and other alkaloids of opium (especially codeine) have a marked palliative effect in the treatment of ulcer of the stomach.

#### THE DANGERS AND AVOIDANCE OF ERGOT IN OBSTETRICS.

In the *Columbus Medical Journal* for May, 1893, CROSSLANDS has an article upon this subject, in which, after quoting his own experience and the instructions given by the standard text-books, he reaches these conclusions:

Ergot is extensively used to prevent an imaginary danger. In cases where its use seems most indicated, better results are obtained without than with it.

Its positive action blinds us to its possible dangers. The evil it does is often credited to other causes.

Administered, it is a potential force over which we have little or no control.

When the natural forces are insufficient, there are other means which are efficient, harmless, and controllable.

When all other means fail, forceps is the final resort for delivery through the natural passages.

#### THE INTERNAL USE OF HOT WATER IN THE TREATMENT OF DISEASE IN INFANTS.

McConnell (*Medical Record*, June 17, 1893) reports the following interesting case, showing the value of this therapeutic measure.

He was called one morning to see a threemonths-old, bottle-fed child, and found it in convulsions. It was emaciated, and the convulsions were evidently due to the non-assimilation of its food. Previous to this, with the exception of a slight irritability of the stomach and bowels, it had appeared perfectly well to the parents. When the convulsions ceased, it commenced to vomit and purge. It could retain no kind of nourishment, not even cold water, and medicines did no good. As a last resort, the reporter ordered all the hot water the child could take, given through a nursingbottle, and nothing else except a chloral and bromide mixture when the child was threatened with spasms, several of which it had since it was first seen. This was continued for twentyfour hours without any nourishment, the surface being sponged every two hours with cold water. It vomited the first bottle of the hot water, but retained the second, and had the most peaceful sleep it had had for a long time. The condition of the bowels gradually improved, and vomiting gave very little trouble. At the end of another twenty-four hours a teaspoonful of cream, lime-water, and water was given every hour, then egg-water, and, finally, condensed milk. This was an extreme case, every one expecting it to die, yet it made a good recovery.

Another child, five months old, that had suffered from intestinal pain from birth, crying almost constantly unless it was nursing. had some fever, the lungs were slightly congested and the bowels were hard and tender. Poultices were ordered and large doses of an opiate given, but it cried on. It refused the breast and did not like cold water. ten hours the parents finally agreed to the administration of hot water. The child took it as if this were the very thing he had been crying for; he took it eagerly and in large quantities, and it gave him almost instant relief. He took little else for thirty-six hours, and it was the most important article of diet for one week. Since that time the child has had an acute attack of vomiting and purging, and the hot water has been tried again with the most happy effect.

Another child, five months old, well nourished, yet crying all the time except when nursing, was given the hot water between the nursing periods, and the remedy cured it completely, after paregoric, etc., had failed to give relief.

The importance, in all gastric and intestinal troubles in adults, of rendering the entire alimentary canal aseptic, "making it sweet and clean," is now almost universally acknowledged, and the results from this method of treatment in these frequent and distressing diseases have been so satisfactory that it encourages general adoption. Theoretically, nothing could be more rational, and practically the results have been beyond the most sanguine expectations. When the child is vomiting and purging, when its very life seems to be oozing away, there is an irresistible temptation to support life by giving nourishing food, yet experience has taught us that all food acts as an emetic or a purgative, and if it do not so act it is useless, the assimilative functions are suspended, and secretions and excretions are perverted. Hot water here is a stimulant, an antiseptic, a sedative, and a food. Water will support life for a time, transfusion of saline solutions has rescued individuals from the grave, and if you will flush the stomach of the vomiting and purging infant with hot water for twenty-four hours, withholding all foods, and then, in small and easily-digestible quantities, at short intervals, give nourishment, you will very often rescue it from the grave. The writer commences with pure hot water, then adds salt, and, when necessary, sugar. The child will drink this with avidity, preferring it to the nurse, it will produce a quiet, peaceful sleep, and the extremities, that were previously cold and clammy, will become warm and natural. The above are only a few of the cases in which, and to which, it is adapted; in fact, McConnell thinks there are few diseases of infancy in which the use of hot water will not prove a valuable aid.

### THE EMPLOYMENT OF IODOFORM IN ABDOMINAL OPERATIONS.

TREVES (Lancet, June 10, 1893) publishes a valuable paper with the above title, of which the following is a brief abstract:

Sir Joseph Lister, in his admirable address on the "Antiseptic Management of Wounds," published in the Lancet a few months ago, drew attention to the very peculiar antiseptic properties of iodoform. He showed that the drug has little, if any, influence over the growth of bacteria outside of the body, and that if it be dusted over sterilized cultivating jelly in a test-tube, growth will take place from organisms which are contained in the iodoform itself. He then proceeds to consider the question in the following words: "But, though such is the case, it is nevertheless unquestionably true that iodoform exercises a powerful antiseptic influence upon wounds. The most probable explanation of this apparent anomaly is that suggested by Behring, namely, that iodoform produces its beneficial effects not by acting directly upon the bacteria, but by inducing chemical changes in their toxic products. Behring has ascertained, as a matter of fact, that some of these toxines are altered chemically by iodoform, and at the same time rendered harmless. Two of his experiments, performed in conjunction with De Ruyter, may be quoted in illustra-A ptomaine obtained from a culture of pyogenic micrococci killed a mouse in twelve hours when injected pure into the peritoneal cavity, but proved quite harmless under similar circumstances when mixed with a little iodoform. Again, a sample of decomposing pus, which had fatal effects when introduced unmixed into the peritoneal cavity of a mouse, had no influence whatever upon the health of the animal if treated with iodoform, which meanwhile left intact the pyogenic microbes."

Treves has, for some time past, dusted the exposed tissues in deep wounds—such as are left on excising tuberculous glands—very freely with iodoform, and in the present paper gives his experience of a like employment of iodoform within the abdomen. It would be illogical to argue that the results obtained in the series of cases he reports wholly depended upon the employment of iodoform. They were cases, however, which are apt to be followed by certain dangers and complications, and it is probable that the uniformly uneventful course observed in each of the cases was not entirely unassociated with the use of this potent drug.

Mr. Treves then quotes four cases—one of pyonephrosis, with post-renal abscess; another of fæcal fistula following a dermoid cyst of the ovary; another of sessile ovarian tumor; and a fourth of abscess of the liver—in which he employed iodoform. He concludes his paper as follows:

"I could add to the above several other cases of abdominal section in which iodoform was freely introduced into the peritoneal cavity. These include examples of cholecystotomy, nephrectomy for hydronephrosis and resection of intestine (for both malignant disease and fæcal fistula), with immediate union of the divided ends of the bowel by sutures. These cases, however, do not present any special features. In the nephrectomy for hydronephrosis some diarrhœa commenced on the eleventh day and lasted three days. It may have been caused by iodoform, although the patient had no other symptoms, and exhibited throughout the whole of the after-treatment a perfectly normal temperature. As the kidney was of large size and the patient advanced in years, I cannot but think that his ready recovery may have in some measure been assisted by the protective influence of the iodoform within the abdomen."

#### THE USE OF ANTISPASMINE.

The Journal de Médecine de Paris for June 11, 1893, contains an account of the employment of this substance by Demme, of Berne. Antispasmine consists in the chemical combination of one molecule of the narceinate of sodium and three molecules of the salicylate

of sodium. It occurs as a white, hydroscopic powder, very soluble in water, the solution being slightly yellow. The preparation cannot be exposed to the air if it contains much moisture. The therapeutic results which have been obtained with narceine itself are somewhat contradictory; but Demme, has demonstrated that antispasmine in various painful spasmodic affections, such as convulsive cough, whooping-cough, and in croup due to spasmodic affections of the larvnx, is of marked He thinks that it is a medicament which deserves attention, particularly for use in children, as he believes that it has not the disadvantages of opium. The ordinary doses are from 1/2 to 11/2 grains, but in whoopingcough twice this amount may be given. It can be administered in this way:

R. Antispasmine, gr. xv;
Distilled lemon-water, Jiiss.
Sig—10 to 15 drops of this may be given once or twice a day with a little sugar and water.

Or the following may be employed:

R. Antispasmine, gr. vii; Distilled water, 3i; Cognac, 3i; Syrup, xv

Sig.—A dessertspoonful to a tablespoonful three times a day of this mixture will be found useful as a sedative in the cough of adults.

#### STERESOL.

In the Journal de Médecine de Paris for June 11, 1893, BERLIER, of Grenoble, makes a communication as to this new substance, which he believes is destined to be very useful in the treatment of diseases of the skin and mucous membrane.

Steresol possesses marked antiseptic properties and adheres closely to the mucous membrane of the skin. From his experience, Berlier believes that it possesses powerful bactericidal properties, and he has discovered that carbolic acid, which is its most active ingredient, is not completely evaporated from the area to which the steresol is applied for some twenty-four hours. When applied in the mouth, it rests upon the place to which it has been applied and resists the movements of deglutition. It does not cause pain in its application, nor does it possess any cauterant action. He has employed it thirteen months in the treatment of diphtheria, and has obtained eighty-one per cent. of recoveries in the anginose form of this disease. He states that, at the Hospital St. Louis, Hallopeau obtained very satisfactory results in the cicatrization of lupus which had resisted scarification and the application of sublimate compresses.

At another hospital, Jullien had obtained good results in a number of cases of eczema and ulcerative erythema. He believes that steresol maintains a condition of asepsis in the part to which it is applied, and believes that it is indicated in such maladies of the mucous membrane as diphtheria, coryza, and vaginitis, and also in the skin-diseases, particularly those which are situated in such regions that it is difficult to maintain the application of medicaments.

#### SUBCUTANEOUS INJECTIONS OF SALOL IN THE TREATMENT OF TUBER-CULOSIS.

According to the Journal de Médecine de Paris, June 11, 1893, GRASSET has obtained very satisfactory results in the treatment of tuberculosis by the subcutaneous injection of salol. The advantages claimed are the decrease in the fever and night-sweats, with a simultaneous moderation of the cough and the number of bacilli. He employs salol with oil in the following mixture:

#### R Sweet oil, 3i; Salol, 3iiss.

This is given with a syringe which contains five drachms. The injection is made underneath the skin, and Grasset asserts that within twenty minutes after its use salicylic acid may be obtained from the urine. The injections should be given in those portions of the body where the subcutaneous tissues are loose, as there is always slight induration produced, which, however, shortly passes away.

#### ON A NEW THERAPEUTIC METHOD, CON-SISTING IN THE USE OF ORGANIC LIQUIDS EXTRACTED FROM GLANDS AND OTHER ORGANS.

DR. BROWN-SEQUARD concludes an interesting article on the above topic in the *British Medical Journal* for June 10, 1893. After speaking of the importance of liquid expressed from all parts of the economy, and of the importance of the injection of dog's blood in various affections, he finally concludes with an explanation of the mode of action of the various organic liquids.

When a morbid state, as myxœdema, or a series of symptoms such as we see in cases of

deficiency of the internal secretion of any gland, exists, it is very easy to understand how the cure is obtained when glandular liquid extracts are used; we simply give to the blood the principle or principles missing in it. In 1856 the author, finding that certain internal secretions are essential to life, came to the conclusion, much later on, thus to supply them to the organism out of order from the lack of certain principles; and believing that the morbid phenomena of old age are due to the deficiency of a certain internal secretion, he resolved to try to give the missing elements of that secretion by means of injections of a liquid extracted from a healthy gland of the same kind as the one which age had rendered faulty. The great movement in therapeutics, as regards the organic liquid extracts, has its origin in the experiments he made on himself in 1889, experiments which were at first so completely misunderstood.

As regards other explanations of the mode of action of the various organic liquids which are employed, there is no room to say more than that which follows: r. Certain principles entering the blood, after having been injected under the skin, give to certain tissues nutritive elements which our food digested in the stomach and duodenum could not furnish; it may be so for the cerebral or medullary liquids. 2. The tonic influence certainly existing when the liquids from the sexual glands, or some other liquids in a less degree, are injected, explains how nutrition is improved, and how also morbid phenomena due to weakness may be made to disappear. 3. When the liquids extracted from the sexual glands are employed, as shown elsewhere, elements able to form new cells enter the organism, and thereby favorable organic changes can occur. 4. Organic liquid extracts resemble each other on account of the presence in the blood, and necessarily also in the various tissues, of elements coming from the internal secretion of all parts. It is not surprising, therefore, to find that any organ can give a liquid which might in a measure be used in place of any other. 5. When we know how great, how various, are the morbid, physical, or dynamic alterations the nervous system can produce, it is easy to understand that what it can do in one way it can also do in just the opposite way, so as to re-establish the normal state physically and dynamically. may serve to explain the extreme variety of favorable effects that may be due to certain liquids which increase considerably (as is proved) the power of action of the cerebrospinal centres.

#### ANÆSTHETICS IN LABOR.

In the Northwestern Lancet, Dr. A. B. CATES, of Minneapolis, contributes a paper upon this subject, which he read before the Hennepin County Medical Society. He discusses briefly the advantages and disadvantages of anæsthesia in the practice of obstetrics, and thinks that of its advantages in properly selected cases there can be no doubt. A condition of acute anæmia produced by exhausting loss of blood is a decided contraindication for both chloroform and ether. The writer has seen one death from ether, carefully administered for the evacuation of a uterus containing decidua of an abortion, when the heart appeared to be perfectly healthy. The previous loss of blood must have been very considerable, with comparatively empty blood-vessels. The absorption is overwhelmingly rapid.

Of the use of ether for obstetrical anæsthesia he has no experience. It is open to the same objections as chloroform in regard to inertia and post-partum hemorrhage. It is not so readily absorbed nor eliminated, and more care is necessary in regard to fire. One of its disagreeable after-effects is also the establishment of lactation twenty-four to forty-eight hours later than normal, and babies are more liable to be colicky after the first few nursings.

Again, ether cannot be used for relief of pain for so long a time as chloroform, as it is not so readily eliminated, and after long-continued use becomes a depressant.

Chloral should not be passed without its portion of praise. During the first stage, where the pains are irregular or spasmodic and the os not readily dilatable, its effect is very satisfactory. The best method of administration is in doses of 15 grains, repeated in from twenty to forty minutes, if necessary.

It is contraindicated in diseases of the stomach and heart, being especially dangerous in the latter affections.

Bromide of ethyl and cocaine have not been of sufficient benefit to claim any continued use or recognition in obstetrics.

#### THE COMPARATIVE ACTIONS OF EXALGIN AND ANTIPYRIN IN THE TREAT-MENT OF MENTAL DE-RANGEMENTS.

From a comparative study of thirty-nine cases of various mental disorders treated by exalgin and antipyrin, E. MARANDON DE MONTYEL (Bull. Génér. de Thérapeutique, April 30, 1893) arrives at the following conclusions:

- 1. Antipyrin may be administered to patients in soup, in order to avoid all sources of error and their knowing that they are taking any medicaments. Similarly, exalgin may be given in wine.
- 2. When administered during meals, according to Desnos, exalgin should be given for one month, in daily quantities of one gramme, in two doses, being careful that no disagreeable physiological effect is produced, since the drug exercises a noxious action on nutrition.
- 3. Like antipyrin, exalgin may influence favorably hallucinations and sensory disturbances (delirium) of reflex origin, but such an action is less marked than that produced by antipyrin.
- 4. Like antipyrin, exalgin is apt to aggravate considerably the hallucinations and sensory disturbances (delirium) *not* due to a reflex origin, and this noxious action is again more frequent and more marked than that of antipyrin.
- 5. Therefore, in the treatment of hallucinations and sensory disturbances (delirium), particularly of reflex origin, antipyrin is to be preferred to exalgin, owing to the fact that antipyrin exercises no influence on nutrition; whereas exalgin, on the contrary, produces a marked deleterious action on nutritive processes.

#### THE ACTION OF PHENOCOLL HYDRO-CHLORATE IN MALARIA.

DR. G. Cucco (Therapeutische Monatshefte, April, 1892) reports his experiments with phenocoll hydrochlorate during two summer months, when many malarial patients came under his notice. Mindful of Golgi's directions for the most effective use of quinine, he gave the new remedy in the same way, so that it might be absorbed a few hours before the impending attack of fever. In a few cases he made comparisons of the action of quinine and phenocoll on the same individual, and also on different persons. The total results were: Of eighty-four cases of malarial fever, the phenocoll was effective in fiftytwo, in twenty-one its action was doubtful, and in four cases it was ineffective. As to the remaining seven cases he is not yet able to re-Cucco gave the remedy in doses of from 15 to 22 grains a day, and 71/2 grains per dose, without any special disadvantages. The examination of the urine, which was made in almost every case, showed an increase of uroerythrin, and otherwise nothing abnormal. In one case of malarial albuminuria it did not produce any bad effect either upon the kidneys or the general condition. The latter improved under good nursing.

Dr. Cucco believes that phenocoll is destined to a place in therapeutics as an excellent substitute for quinine.

#### THE THERAPEUTICS OF LEUKÆMIA.

DR. VEHSEMEYER (Therapeutische Monatshefte, April, 1893) describes a case of leukæmia which he treated. The child, when it came under his treatment in March, 1892, was nine months old, with poorly-developed muscles; it was anæmic; the spleen was enlarged, hard, and smooth. The liver could be felt a finger'sbreadth below the ribs.

There was no doubt that rickets existed, but the profuse perspiration and dyspnœa being very characteristic symptoms of leukæmia, the blood was examined, and plainly showed that leukæmia was also present. The blood was bright red, very thin, coagulating with difficulty; the red cells were diminished; the proportion of white cells to the red was estimated as one to thirty; the count was made from undiluted dried blood, Vehsemeyer preferring this to the Thoma-Zeiss counting apparatus. Marrow-cells and polynuclear elements were most numerous.

Although himself a sceptic as to the microparasitic nature of the disease, Vehsemeyer ordered:

> R Creosoti, mxv; Alcoholis, Aq. dest., of each, mlxxv.

Sig.—Three drops every three hours, increasing daily by one drop at each dose.

There was no doubt of the beneficial result of the medication, which was accompanied by the washing out of the intestine with half-percent. lysol solution. The temperature became normal; there was, after a few days, an entire cessation of the profuse perspiration; the spleen became smaller; the visible mucous membrane grew red and the waxy-white skin acquired more color, while the dyspnœa decreased; but the stridor continued in a degree seldom noted. The repeated examinations of the blood showed a lessening of the white cells, and the color became healthy.

The constipation continued unchanged; the washing out of the intestine produced hard fæces and much mucus, chiefly in lumps. The lymphatic gland could not be felt; there were no hemorrhages; no pains in the bones.

While the leukæmia improved, the rickets grew worse, and in April trouble with teething and bronchitis interrupted the treatment. On the 16th of May lymphatic gland swellings were first noticed, especially on the right side of the

throat at first. In the course of the next day pea-sized tumors were felt in the inguinal, axillary, and cervical glands. Along with the appearance of these tumors there was a perfect flooding of the blood with white cells, so that the relative condition on the 25th of May was about one to three. The medullary cells were especially prevalent, these being also especially large,—chiefly five to six times larger than the red.

The general condition became very bad, and a new treatment with crossote brought no improvement. Vehsemeyer now gave tincture of Berberis vulgaris; at first a few drops a day, and then, encouraged by the result, a solution of Berb. sulph. in dilute alcohol. He also put the child on Rademann's infant food. The swollen glands he treated with a salve made from—

Ammon. chlor., gr. lxxv; Camphoræ, gr. xv; Adipis, **3**i.

In a few days this had reduced all the glands in size, and they became soft, and finally broke. These gland abscesses healed very quickly, so that there were soon but small remnants of the egg-sized tumors. In June and July this treatment produced a marked improvement in the child in every respect, the blood became normal, and the rickety symptoms had improved by the use of phosphorus. Early in August new teething troubles produced fever, and the general condition suffered, but the examination of the blood showed no change in it. On the 16th of August death followed after a convulsion, probably caused by a tooth about to erupt.

### OBSERVATIONS ON THE NATURE AND TREATMENT OF ANGINA PECTORIS.

After an interesting discussion of the subject heading this article, Dr. J. Burney Yeo (*Practitioner*, May, 1893) reaches the following conclusions:

The true indications for treatment in angina pectoris may be thus summarized:

- r. To maintain or improve, when defective, the general nutrition; to avoid all strain, physical and emotional; and so to relieve cardiac feebleness and excessive effort.
- 2. To relieve dyspeptic conditions and flatulent or fæcal distention of the stomach and intestines.
- 3. To forbid the habitual consumption of agents which may exercise a toxic action on the heart, such as tea, coffee, tobacco, alcohol, etc., or that may introduce or develop toxines in the alimentary canal.

- 4. To avoid and remove all gouty and other blood contaminations.
- 5. To give such tonic remedies as may improve the cardiac tone and lessen existing tendencies to cardio-vascular degeneration.
- 6. To relieve the paroxysmal attacks by sedatives and stimulants.
- 1. Anginal attacks occurring in persons who present signs of anæmia or wasting, and defective nutrition generally, must be encountered, in the first place, by careful attention to hygienic measures. Such patients must be removed from all causes of physical or mental strain. Their life must be one of complete repose of mind and body,—a repose alternated with gentle physical exercise, always stopping short of the slightest fatigue; it is good for them, however, to be much in the open air, driving, sailing, or reclining, and in a mild climate, when possible, so that they shall be protected from the injurious effects of cold, exposure to which certainly favors the occurrence of these attacks, not only by lowering the nervous force, but by checking free cutaneous circulation and elimination. Much attention should also be paid to their diet. It should be of the most nutritious nature, so far as is consistent with ease of digestion. almost exclusive milk diet will be found to be of great service in many cases. When the digestive powers are greatly weakened, it may be necessary to have recourse to predigested foods, or to give with the food some artificial digestive agent, such as a trustworthy preparation of pepsin or pancreatin. A wineglassful of cream mixed with the same quantity of hot water, and a teaspoonful of sal volatile added, is an excellent food on getting up in the morn-The lighter kinds of fish,—soles, whiting, flounders, etc., -simply grilled, and eaten with a squeeze of lemon and plain uncooked butter, are excellent; lightly boiled or poached eggs are permissible, if there is no gouty tendency; and also good consommé, flavored with vegetables; the lean of fresh meat passed twice or three times through a mincing-machine, and then lightly cooked in a bain-marie, is most digestible and nourishing, and of great value when there is masticatory difficulty, as is so often the case; fresh vegetables in the form of purées are useful, and so is the pulp of cooked fruits, as affording the necessary variety in the food and promoting the action of the bowels. Light milk puddings are also commendable. We should, moreover, see that a sufficient quantity of pure water is consumed, for eliminative as well as assimilative purposes; this is a point often overlooked, and the importance of a due ingestion of pure water as an indirect

nutritive agent of the first consequence is too little insisted upon.

- 2. This first indication cannot, however, be thoroughly carried out without due regard to the second,—namely, to relieve dyspeptic conditions and flatulent and fæcal distention of the stomach and intestines. The coexistence of dyspeptic states must be treated in accordance with general principles; an alkaline bitter stomachic, composed of sodium bicarbonate, nux vomica, and calumba, an hour before the two principal meals, will be found valuable. Or, in other cases, a dose of dilute hydrochloric acid in compound infusion of orange-peel, after food, with or without the addition of a few grains of pepsin, may be given. Flatulent distention during digestion will often be effectually relieved by a pill containing a grain of thymol or a drop of creosote, taken directly after food. Regular evacuation of the bowels of fæcal accumulation is most essential, checking, as it does, the formation of injurious toxines in the intestines, eliminating waste substances, and relieving abdominal distention. For some persons the best aperient is a dinner pill, containing a grain or two of aloes, 1/2 grain of powdered ipecacuanha, a grain of nux vomica powder, and a grain of soap; this may be taken directly before or after dinner. Should such a pill prove insufficient, it may be followed occasionally by a teaspoonful of Carlsbad or Homburg salts in half a tumblerful of hot water, the next morning. In cases where there is sluggishness of liver, with bile-stained conjunctivæ, a few grains of blue-pill, or 1/4 of a grain of podophyllin at bedtime, with 2 or 3 grains of compound rhubarb pill, may take the place of the dinner pill.
- 3. The next indication is also an important one; for certain of the slighter forms of angina are no doubt dependent on, and the more serious forms may be provoked by, the habitual use of certain substances which come, in course of time, to exercise a toxic action on the heart. The action of these toxic agents is all the more subtle because they may be taken for many years without apparently producing any injurious effect, and it is often difficult to convince a patient that what he has so long done with impunity has at length become injurious. particularly the case with tobacco, the toxic effects of which on the heart are often delayed until, or even after, middle age, when they will perhaps somewhat suddenly make themselves With regard to alcohol, it is singular to observe how in different individuals its toxic and degenerating influence will sometimes fall on one organ and sometimes on another.

cardio-vascular system in some persons is especially prone to undergo serious degenerative changes under its influence, while in others it almost entirely escapes, and hepatic and gastric troubles more especially arise, and in women the peripheral nervous system is most prone to be affected; but whenever anginal symptoms arise, we should always insist either on complete abstinence from alcohol, or on its very sparing use in a very dilute form. Tea and coffee are often provocative of the slighter manifestations of cardiac pain and discomfort, and it is noteworthy that they are particularly prone to aggravate, or rather to be aggravated by, any emotional disturbance. All these toxic agents must be forbidden so long as any tendency to anginal attacks exist.

4. The next indication is to remove and avoid all gouty and other blood contamina-The importance of elimination in the treatment of angina pectoris is universally admitted; and although the author does not go so far as Dr. Ord, who is reported to have said, "that if he were restricted to one remedy in the treatment of angina, he would prefer sulphate of magnesium to nitro-glycerin," he emphasizes the importance of a free evacuation of waste products from the system. When renal elimination is defective from the coexistence of renal degeneration, we must act freely on the bowels and on the skin. When the kidneys are sound, the free use of pure water, or some suitable mineral-water having some slight stimulating action on the kidneys, may avoid the necessity of free purgation; but in all cases a thorough daily evacuation of the bowels should be procured, and free action of the skin should be maintained by warm baths and frictions. gouty cases and in all cases of defective elimination, a careful and spare diet, sufficient, but avoiding all excess, should be prescribed. Animal food should be taken only in great moderation, and fresh vegetables and fruit, carefully cooked and prepared so as to be made easy of digestion, should take its place. All alcoholic stimulants should be avoided, and when milk is not unacceptable to the patient, a few weeks of an exclusive milk diet may be advantageous.

5. In the fifth place the consideration of medicinal treatment is taken up, and first of the appropriate treatment in the intervals,—i.e., of the constitutional condition underlying the paroxysmal attacks.

In anæmic cases and cases of temporary cardiac debility from removable malnutrition, we shall find the milder preparations of iron, combined with small doses of digitalis, of great service. In other cases we shall find arsenic of

greater value than iron; and here, again, there is a general consensus among experienced physicians as to the value of arsenic in the treatment of cases of angina pectoris in the intervals between the paroxysms. Balfour asserts that arsenic is "indispensable in all forms of weak heart accompanied by pain." He advises that it should be given in the form of Fowler's solution, 3 to 5 minims, combined with iron and strychnine, twice a day, after food. We cannot too strongly insist on the value of strychnine as a cardiac tonic, especially in remediable states of cardiac asthenia. In highly neurotic cases much benefit may be derived from a combination of iron or arsenic and potassium or sodium bromide, in 5- to 15-grain doses; and in the same class of cases the valerianate of zinc is also of great service; it may be given in grain doses in a coated pill thrice daily, after food; and sometimes the combination of  $\frac{1}{60}$  of a grain of phosphorus with it renders it a more valuable nerve-tonic.

He has already pointed out the usefulness of digitalis in the milder cases, and has seen long periods of immunity from attacks apparently brought about by occasional recourse to a mild iron tonic, with 5-minim doses of tincture of digitalis, or a pilule of Nativelle's digitalin ( $\frac{1}{1600}$ ) grain). The idea of giving a combination of nitro-glycerin and digitalis during the intervals is a concession to the vaso-motor hypothesis of the mode of causation of the attack, to which the next paragraph refers.

There is another remedy which is of very great value in the treatment of angina pectoris, especially when it is associated with obvious signs of cardio-vascular degeneration and of the gouty state, and that is potassium iodide. It checks the progress of degenerative changes, is stimulates glandular organs, and efficiently promotes elimination, and it appears also to prevent vaso-motor irritability; all these effects may depend on its eliminative properties. It is one of the most efficient antineuralgic agent in other forms of nerve-pain. It may be giver in 5- to 15-grain doses, three times a day.

In cases traceable to malarial intoxication, i arsenic fails to relieve, quinine should certainly be given; but in such cases evidence of arterio sclerosis will usually be present, and will indi cate the use of potassium iodide. It has re cently been stated that cocaine, in doses of 5 of a grain, thrice daily, has the power of en tirely preventing attacks of angina; if a furthe experience should prove the accuracy of this statement, it would go far to support the view that the anginal attack is dependent on a hyper æsthetic condition of the cardio-sensory nerves

6. It only remains to consider the indications for the relief of the paroxysmal attacks. Those who see in the causation of the anginal paroxysm the predominating influence of vaso-motor spasm consider that the main indication for the relief of the paroxysm is to administer medicinal agents which are known to have the power of relaxing the arterioles, and so lowering arterial tension, and, to that extent, to relieve the heart of a certain amount of the peripheral resistance it has to overcome. They therefore advocate the use of the nitrites. such as the nitrite of amyl, nitro-glycerin, and sodium nitrite. That these agents do relieve the paroxysm in many cases of angina is certain; that they do so wholly by their action as vaso-dilators is extremely doubtful. In the first place, they are capable of relieving the anginal attack when there is no certain evidence of the existence of vaso-motor spasm. Dr. Douglas Powell says he has found them "far more reliable in the graver cardiac cases than in the purer vasomotory," but it is in the latter that they should prove most efficacious if the prevailing theory of their action were true. Balfour and Grainger Stewart say both have the power of relieving pain in other as well as in cardiac neuralgias, independently of their relaxing action on the blood-vessels; and this view Yeo adopts as the most consistent with the clinical history of this

Nitrite of amyl is best administered by inhalation. A capsule containing three to five minims should be broken in a handkerchief and inhaled. In some cases, however, it entirely fails to relieve, although it may produce, in a most marked form, its characteristic effect of dilating the vessels. Nitro-glycerin is preferred by others, and it has been pushed until very large doses have been taken; as much as 35 drops of a one-per-cent. solution have been given and repeated at short intervals during an attack, and 7 minims three times a day in the intervals. We should begin, however, with much smaller doses,—I to 2 minims of the oneper-cent. solution. Whitla recommends smaller doses-1000 minim of nitro-glycerin-very frequently, so as to maintain the effect and avoid the headaches which often follow the larger doses. Sodium nitrite may also be employed for the same purpose; its effect is said to be more lasting than that of nitrite of amyl and nitro-glycerin. It is given in tablets of 21/2 grains; one to four of these may be given for a dose. At the onset of an attack, in addition to the inhalation of nitrite of amyl, which, owing to the rapidity of its action, is the most suitable remedy to start with, we may give some

warm diffusible stimulant, such as 30 minims of sulphuric ether, or a drachm of nitrous ether. with a drachm of sal volatile, or a little brandy in an ounce or two of peppermint-water. The feet and hands, if cold, may be placed in hot Balfour says he has been disappointed in the action of nitro-glycerin, and prefers inhalations of nitrite of amyl; and when these fail, as they often will, he resorts unhesitatingly to chloroform inhalations, and he adduces a great weight of evidence in favor of his contention that, "so far from being unsafe in cardiac disease, it is often of the greatest use in these cases." Sulphuric ether is used also for the same purpose; but, as Balfour says, "it is not rapid enough. Chloroform acts more quickly, even more effectually, and is perfectly safe." He gives it poured on a sponge in a smelling-bottle, and the patient is told to breathe it through his nose as deeply as possi-"In this way relief is obtained in a few seconds, and so soon as the narcotic influence is produced, the smelling-bottle drops, and with it rolls away all risk of any overdose." In severe and protracted attacks we may be obliged to have recourse to hypodermic injections of morphine; 1/4 of a grain may be injected for a dose. Morphine seems to be better tolerated in cases of cardiac pain with a weak heart than when it is given to relieve other neuralgias under the same circumstances. When it is given to relieve cardiac pains there seems to be less risk of its causing cardiac depression. It is, however, a good plan to give some ether and ammonia mixture at the same time to counteract any such possible depression. The ethereal tinctures of valerian and of castor have been found useful. The inhalation of pyridine has been said to give immediate relief, but the unpleasant penetrating odor of this substance makes patients object greatly to its Bromide of ethyl has also been used in. inhalation. The value of counter-irritation has elsewhere been shown by Yeo, in the form of flying blisters in those cases where a chronic aortitis may have involved contiguous branches of the cardiac plexus. A hot mustard poultice to the præcordial region may be useful at times; a hot application to the region of the heart in anginal cases is a very popular remedy in the Vienna school. The application of the continuous electric current along the course of the vagus in the neck and down the arm, in cases where a distinctly painful aura is experienced in the hand, has been found useful in warding off attacks. Leeches applied over the sternal region and repeated small bleedings from the arm have also been found useful.

#### CASCARINE.

According to the studies of LEPRINCE (Bull. Génér. de Thérapeutique, March 15, 1893), cascarine, the active principle of Cascara sagrada or Rhamnus purshiana, occurs in prismatic needles of a variable orange-yellow coloration. Some samples of cascarine are entirely red, without a trace of yellow. The coloration depends upon the degree of hydration, and probably also upon that of etherification. carine is an insipid, odorless substance, soluble in caustic potash, soda, or ammonia, and gives with potash a reddish solution; it is likewise soluble in alcohol, with which it gives a yellow hue; also in chloroform, slightly so in ether, but is insoluble in water. The formula of the drug is given as C<sub>12</sub>H<sub>10</sub>O<sub>5</sub>. Cascarine melts, decomposing at 200° C., and is entirely decomposed at 300° C., leaving a carbonaceous residue. The hydrated cascarine, with a composition of C.H.O.H.O, occurs in the form of a greenish-yellow powder, having a melting-point of 200° C., and possessing, in other respects, the same properties as the anhydrous substance. Exposed to the air, however, the hydrated cascarine absorbs moisture, and is turned into a brownish mass, which melts at 150° C., and presents the same characters as the alkaline extract of the crude cascara. Cascarine combines with diacetic ether, and is then represented by the formula C, H<sub>2</sub>O<sub>2</sub>(C,H<sub>2</sub>O<sub>2</sub>); this latter appears in the form of yellow needles, insoluble in water and ether, soluble in alcohol, but less so than cascarine itself. When a rapid current of ammoniacal gas is passed through an alcoholic solution of cascarine to a point of saturation, crystals are formed. These crystals, dried and exposed to the air, lose the ammoniacal gas; placed then in a bottle, they slowly decompose into a black mass. This ammoniacal combination is represented by the formula  $C_{\bullet}H_{\bullet}O_{\bullet}(NH_{\bullet})_{\bullet}.$ 

#### SOYA BEANS FOR DIABETES.

In the London *Practitioner* for May, 1893, Dr. W. Hale White reports his investigations as to the value of soya bean as a food for diabetics. After telling us that the name is *Soja hispida*, and that it is used in Japan and China, he gives a brief history of the literature. The soya beans are ground up and made into bread or biscuits. The biscuits keep for a considerable period of time, but the bread has to be made freshly every two or three days in order to prevent it from becoming rancid. White states that it is very palatable, and that the

amount of starch which is present in it is so very small that it cannot be used for thickening soups or making puddings. The cases which Dr. White details show that the soya bread has acted very well in his hands. He regards the soya bean diet as quite as efficient as gluten bread diet; indeed, a little better in reducing the quantity of sugar in the urine and in the improvement of the patient's general health. He found no ill effects from its administration.

#### ASEPSIS IN OPERATIONS PERFORMED ON THE EYES.

"Asepsis in Operations performed on the Eyes" is the subject of a long report by NUEL presented to the French Ophthalmological Society in Paris, May, 1893 (Revue Générale d'Ophthalmologie, May, 1893). From this report we make the following abstracts:

1. Asepsis and Disinfection of the Subject to be operated upon.—A complete bath with soap may be necessary under special conditions. A mild purgative should be ordered the night All efforts should be before the operation. concentrated on the eye and its immediate surroundings. The region should be carefully washed with soap, and after this the antiseptic lotions applied for several days. The palpebral border must be carefully washed with the antiseptic solution. It is recommended that the same antiseptic fluid be used to freely irrigate the conjunctival sac, the lids being turned, if necessary, to secure complete exposure, and in sensitive persons there is no objection to the use of cocaine.

The choice of the antiseptic is limited. It should be an active one, but from the nature of its application must not irritate the conjunctiva. Nuel prefers an aqueous solution of sublimate, I to 2000, seldom weaker, although he is willing also to use 1 to 3000, or even 1 to 5000, especially if it has been previously heated, which increases its bactericidal quality. He thinks this washing of the conjunctival sac should be repeated for two or three days preceding the operation. Other antiseptics mentioned are certain mercurial salts; for example, the ioduret, 1 to 2000, recommended by Panas; oxycyanuret and cyanuret of mercury, 1 to 1500, recommended by Chibret; and trichloride of iodine, 1 to 1500 and 1 to 2000, according to Pflüger. He thinks the list might be still further increased, and does not doubt that more active antiseptic substances will be discovered which are less irritating to the conjunctiva. It appears that mixtures of various antiseptics are capable of effecting ome progress in this direction, and he refers to pheno-salyl. The ideal substance is one which, while actively antiseptic, has no deleterious effect on the tissues. In his opinion, a four-per-cent. solution of boracic acid is not sufficiently antiseptic. Nevertheless, according to Bourgeois, there is much to be said in favor of boro-borax, a solution of boracic acid in an aqueous solution of borax. Pyoktanin seems not to have met with much favor.

After the operation itself is begun, the solution of sublimate is not to be brought in contact with the eye or the conjunctiva. The necessary irrigation is done with a physiological salt solution, sterilized by boiling. Other liquids—for example, a four-per-cent. solution of boracic acid—may be used, but Nuel does not believe them superior to the physiological salt solution. He deprecates the use of sponges, because it is not possible to render them aseptic, and prefers bits of gauze, which are sufficiently absorbent and even better than cotton.

He calls attention to the value of making a regular corneal section, which coapts easily and thus forbids the entrance of microbes, but he does not favor a conjunctival flap. He is particularly urgent that the palpebral edges shall not come in contact with the corneal wound. He thinks, in spite of the statistics of Panas and Chibret, that the ranks of those who perform irrigation of the anterior chamber after cataract extraction are rapidly thinning, and he refers to his own researches, which have shown that every solution, except the physiological salt solution, injected into the anterior chamber is capable of injuring the endothelium.

After the operation he prefers a dressing composed of a pad of sterilized cotton held in position by a moderately tight bandage. Although he believes that iodoform, and possibly aristol, while not bactericidal, prevent the development of microbes and diminish the secretion of mucus, their inconvenience as actual foreign bodies in the conjunctival cul-de-sac forbids their general use, except in cases in which there is danger of infection from surrounding sources.

After the operation he removes the dressing, at the end of forty-eight hours, with great care. If the dressing is dry, and there is no suspicious cedema of the outer edge of the superior eyelid, he removes it without separating the lids. If there is the least secretion, he bathes the margins of the lids with a piece of cotton dipped in sublimate solution. If there is noticeable secretion on the first day, and if there is the least swelling of the outer edge of the superior eyelid, he

inspects the eye. If the edges of the wound are infiltrated, iodoform is instilled, and, if necessary, the application of the actual cautery is performed. Antiseptic precautions are particularly urged if the patient is in a depressed state of nutrition. All due care, so far as the lachrymal canal is concerned, is exercised.

He refers to the treatment of conjunctival catarrh, and enumerates remedies, commencing with nitrate of silver and ending with the weakest astringents, among the latest being alumnol. He doubts the value of the treatment—which has been recommended by Haab—of closing the canaliculus by means of the actual cautery, to prevent the passage of microbes from the sac into the conjunctival sac.

Referring to the matter of testing an eye for operation, he recommends that it be bandaged for several days, and if it stands the bandage well, an operation—for example, extraction of cataract—may be performed, particular notice being taken as to whether there is any secretion on the dressing.

- 2. Sterilization of the Instruments.—The difficulty with corrosive sublimate and carbolic acid is that they dull the sharp instruments. This objection does not seem to obtain with cyanuret of mercury, recommended by Chibret. He prefers a solution of two per cent. of carbonate of sodium in water, in which the instruments are boiled. Under ordinary circumstances, an immersion of three or four seconds in this alkaline water is sufficient to disinfect The action of the boiling water someknives. times dissolves the cement which joins the metallic blade to the handle, which can be obviated by having the entire instrument made of metal, although he prefers the bone or ivory He sterilizes only the blade, and plunges the handle into an antiseptic solution, such as the cyanuret of mercury. Dull and metallic instruments may be put entirely in the boiling water.
- 3. Disinfection of the Dressings.—He does not believe that the impregnation of the dressings with antiseptic substances is satisfactory, and prefers to have the dressings made aseptic by sterilization with steam. The only way to sterilize a collyrium, in his opinion, is to boil it before the time of application.

In the discussion which followed, Chibret disagreed with Nuel as to the superiority of sublimate over other mercurial salts, and pointed out that cyanuret of mercury effects a superficial sterilization of longer duration than sublimate. He also is unwilling to abandon pyoktanin, which he believes has very distinct advantages.

Trousseau agreed with Nuel that the manner of using an antiseptic substance is more important than the substance itself.

Panas confined himself in the discussion to intraocular injections, but he still believes that it is safe to disinfect directly the field for operation,—namely, the capsule in which the lens has been lying,—and he prefers a solution of boracic acid, thinking that it causes no trouble with the cornea.

M. Dor is not an advocate of trichloride of iodine, which has served him very unsatisfactorily.

Parisotti, after boiling his instruments, immerses them in a jar filled with pure alcohol, and sterilizes the bandages with sublimate. His bandages are kept in a steaming chamber until they are needed.

Gayet considers washing out the anterior chamber perfectly permissible, using the fluid freely at a temperature of 38° C., and employing for the purpose a physiological salt solution.

### ON THE TREATMENT OF GRAY ATROPHY OF THE OPTIC NERVE.

M. GALTIER (Annales d'Oculistique, May, 1893), after referring to the fact that Brown-Séquard has mentioned locomotor ataxia as one of the affections which has been benefited by the injection of organic liquids, thinks, as a gradation of this disease to gray atrophy of the optic nerve is quite natural, that the report of a case in which he used these injections with satisfaction is advisable. It is unnecessary to give the case in detail, but it is sufficient to say that, after iodide of potassium and mercurial inunctions were used only with inconvenience to the patient, he began injections of testicular liquid after the manner of Brown-Séquard's recommendation. These were begun on the 27th of December, 1893. After two months' treatment, the patient's visual acuity rose from 10 to 1, the field for white improved, and the color-sense was benefited. It was the first case in which the reporter has seen improvement in visual acuteness under such treatment.

#### OPTIC NEURITIS AND OPTIC NERVE ATROPHY CAUSED BY THE TOXIC ACTION OF IODOFORM IN A CASE OF BURN.

This case was reported to the Ophthalmological Society of Paris by M. VALUDE (Annales d'Oculistique, May, 1893). A child, twelve years of age, received a large burn, covering the right

side of the body. The burn, mainly of the third degree, covered the whole right side of the thorax, external surface of the right thigh. and posterior external surface of the right arm. There were also two burns on the left thigh. From the beginning the child was dressed with Seven or eight months after the aciodoform. cident the following phenomena occurred: The general condition was much worse; there were diarrhoea, headache, and vomiting; the sight declined rapidly, and soon there was complete amaurosis. The patient was dressed constantly with iodoform. As the condition remained very bad, it was decided to stop iodoform and replace it by salol. The vomiting and headache disappeared, and with them the other painful symptoms, but the amblyopia continued.

On the 1st of March, 1893, Valude first saw the patient,—that is, sixteen months after the burning and eleven months after the beginning of the amblyopia. The pupils reacted to light. In the right eye the patient counted fingers at ten centimetres and in the left at twenty centimetres; no color perception. The visual field for light was not diminished. There was complete double white atrophy of the optic nerve, without any grayish halo, which usually follows neuritis. The vessels were slightly contracted.

The relation of the amblyopia to the iodoform intoxication seems to the reporter to be proved. He discusses the possibility of iodoform producing such a condition in the optic nerve, and speculates as to whether this was the cause or whether it was caused by the extensive burn.

# THE EMPLOYMENT OF INSTILLATIONS OF SULPHATE OF QUININE IN THE TREATMENT OF ULCERATED KERATITIS.

PEUCH (abstract Recueil d'Ophthalmologie, April, 1893) has experimented in the treatment of corneal ulcers with instillations of the neutral sulphate of quinine, according to the recommendation of Richard Williams, of Liverpool. He uses two solutions:

> Neutral sulphate of quinine, .10 gramme; Distilled water, 10 grammes.

> Neutral sulphate of quinine, .10 gramme; Neutral sulphate of atropine, .05 gramme; Distilled water, 10 grammes.

The first formula finds its application in ulcers of phlyctenular origin, without iritic symptoms; the second in cases complicated with iritis. To sum up, neutral sulphate of

quinine acts on the quantity and quality of the conjunctival secretions which accompany ulcers, especially in children, but it does not act any better in these cases than standard treatments. In infectious ulcers its full value becomes manifest.

#### THE TREATMENT OF STRABISMUS.

M. Parinaud discussed this question at the May meeting of the French Society of Ophthalmology (*Recueil d'Ophthalmologie*, May, 1893), and divided the treatment into the optical or functional and the surgical treatment.

The optical or functional treatment naturally addresses itself to the initial causes of strabismus, and considers the question of accommodation and fusion. Accommodation, and through it convergence, can be acted on in two ways,—namely, by means of glasses and by mydriatics. Glasses are especially useful as a practical means, and he calls that treatment which is based on the use of glasses which correct the ametropia the *dioptrical* method.

In converging strabismus of hypermetropes he instils a solution of atropine, and recommends that these instillations be kept up for at least a week. If the eyes straighten under the influence of the mydriatic, it is likely that the optical treatment will be efficacious. should consist in prescribing glasses which totally neutralize the hypermetropia and astigmatism, and these glasses must be worn constantly. It sometimes happens that strabismus which has yielded to the action of atropine does not immediately disappear with the use of glasses, this being particularly the case when there is a little astigmatism which has not been corrected. The contrary is also true that cases of strabismus on which atropine has had no effect rapidly disappear after the glasses have been worn. It does not necessarily follow because glasses do not give immediate results that they are useless, and it often happens that the action of glasses, insufficient at first, may manifest itself after several months. Atropine cannot take the place of glasses, except in a small number of cases. It is, therefore, only an auxiliary to the dioptrical treatment, but has especial use in the case of young children who cannot wear glasses. He has had no experience with the usefulness of eserine.

In the diverging strabismus of persons affected with myopia, the preceding remedies have little effect. The principal reason of this is that the treatment in this case is not seconded by the natural evolution of diverging strabismus, which, differing from converging strabis-

mus, has no tendency to diminish with the lapse of time. In the converging strabismus of myopes, concave glasses are often prescribed with good results. These concave glasses diminish excessive convergence in cases of this kind, at least for fixation at a distance, while they should really augment it on account of the effort of accommodation which they impose. To understand this paradoxical action of the glasses, we must distinguish in the different forms of strabismus between the dynamic and static relations of these two forces,—that is to say, the synergy of action which unites them in their relations to a state of repose. In the converging strabismus of hypermetropes the convex glasses act by virtue of dynamic relations; in diminishing the accommodative efforts we diminish the effort of convergence. In the converging strabismus of myopes the concave glasses affect the state of rest, and that is why they modify excessive convergence, especially for fixation at a distance,—that is to say, in a state of rest.

The processes which act through the medium of fusion are divided into two classes: those which facilitate binocular vision and those which induce artificially the same binocular Prisms worn like spectacles act by facilitating binocular vision. It is not on account of the training they afford the muscles that they are useful, but by assisting binocular vision, and thus favoring the regular development of the innervation of convergence. In the beginning of the diverging strabismus of myopes, prisms with the base towards the nose, combined with concave glasses, may be of service. In converging strabismus in some cases it is equally advantageous to combine convex glasses with prisms having their base towards While convex glasses relax acthe temple. commodation and convergence, the prisms exert a favorable influence on fusion by displacing the image on the retina.

We can obtain the same reaction as with the prism by using the stereoscope to throw the image of two similar objects on each retina, the fusion of which will give the impression of a single object. With the same instrument a special inducement to fusion may be obtained by using two images of different perspectives capable of producing the "stereoscopic relief." These different exercises form the basis of the treatment recommended by Javal, which, according to this author, is divided into three stages: 1, the production of diplopia; 2, the fusion of double images; 3, the extension of binocular vision to all positions of sight. The treatment with the stereoscope is not always suf-

ficient in itself to remedy strabismus, but is especially useful as an adjunct to the cure obtainable by the dioptrical or surgical treatment.

The surgical treatment of strabismus is divided into tenotomy and the various modifications of capsular and muscular advancement.

#### THE EXTRACTION OF CATARACT WITH-OUT IRIDECTOMY: ITS ADVAN-TAGES AND DANGERS.

DR. GALEZOWSKI (Recueil d' Ophthalmologie, May, 1893) writes as follows: From the day that antisepsis put us in possession of powerful means for promoting the cicatrization of wounds, he felt impelled to return to the extraction of cataract without iridectomy. believed it to be necessary to change the shape of the wound, and instead of performing the large Daviel section, he gave the wound a semi-elliptical shape, the puncture and counterpuncture being placed in the opaque edge of the cornea, equally distant from the Desmares puncture and that of Von Graefe; while, on the contrary, the apex of his section corresponded to the apex of Daviel's section. Since 1878, the time of his first researches on the subject of the semi-elliptical section for the extraction of cataract without iridectomy, until May, 1893, he has been able to apply it in 1934 cases, and presents the following table:

Sex: men, 1139; women, 795. Cataract: without iridectomy, 1599; with iridectomy, 261. Secondary cataract: discission, 368. Iritis, 41; hernia of the iris, 15; phlegmon, 18; irido-choroiditis, 24.

After an analysis of the table, he thinks he is able to say to-day, with all frankness, that while the process of extracting a cataract through a semi-elliptical incision has great advantages, it also presents great difficulties, which should be known in detail in order to be avoided. This is the object of his present communication. The following are the advantages of extraction of cataract without iridectomy:

1. Preservation of the round shape of the pupil, as well as the functions of the pupillary sphincter. The eye thus operated upon is less dazzled by bright light, and he thinks that in a large number of subjects operated upon, both myopes and emmetropes, the correcting glasses are diminished by one or two dioptrics. In this manner he has often obtained normal visual acuteness with seven or eight dioptrics, while in extraction with iridectomy, nine or

ten or eleven dioptrics were used for the same correction. For reading, he obtains normal acuteness with these patients with convex spherical glasses thirteen or fourteen dioptrics, using appropriate cylindrical glasses with them; whereas, in cases of extraction with iridectomy, the same result can be obtained only with the aid of the convex spherical glasses fifteen or sixteen dioptrics.

- 2. The easy removal of the crystalline lens without fear of prolapse of the vitreous body constitutes a great advantage. This accident is rare, providing the corneal wound is at a certain distance from its edge and from its peripheral border. The puncture and counterpuncture being located in the sclerotic border. we gain a millimetre and a half on each side of the corneal flap, and thus have a greater opening laterally by almost as much as is lost in the height of the flap. Furthermore, as the wound is not as peripheric as the one made by Von Graefe's method, the pressure applied to the eyeball in order to loosen the cataract and drive it out has less tendency to cause laceration and prolapse of the vitreous body than with the former process. This prolapse of the vitreous is still less to be feared, as he always removes the blepharostat as soon as the corneal incision is completed. In delivering the lens, he presses on the lower part of the eyeball with the thumb of his left hand through the lower eyelid, and with the curette on the upper part of the eyeball and above the cut. As the crystalline lens, freed from its capsular cavity, presents in the wound, he diminishes the pressure. and thus avoids a sudden expulsion of the
- 3. It is of importance to make the incision in the cornea and perform the rest of the operation quickly. Half a minute is sufficient for the first part of the operation. Immediately he removes all instruments from the eye in order to expel the cataract by simple pressure on the eyeball. Thus the patient is not harassed by the tweezers and blepharostat in his eye at the most critical moment of the operation, which is when the crystalline lens is coming out.

His opinion in regard to the use of cocaine in operations for cataract is this: The less it is used the better, and consequently an operation for cataract should be as short as possible. It will be all the better for the peace of the patient and for the closing of the cut. Simple extraction of cataract never gives rise to hemorrhages, whether in case of arthritic, gouty, or diabetic patients. Such accidents are more to be feared in peripheric extraction with iridectomy. He thinks that intraocular hemorrhage

is to be explained by section of atheromatous vessels of the iris near its ciliary ligament, and hence this accident is not at all to be dreaded in simple extraction or with sphincterotomy.

The dangers to be avoided are of different kinds, and may occur at any stage of the operation. He makes the puncture on the opaque border of the cornea, and after cutting the capsule, makes the counter-puncture. A grave difficulty may arise when the incision is made in the capsule,-namely, the cortical layers of the lens may enter the anterior chamber and render it impossible to properly execute the counterpuncture. This accident must be prevented by making a proper diagnosis of the kind of cataract which is to be operated upon. He is quite willing to have incision of the capsule made in the second stage of the operation before the expulsion of the cataract. The important thing is to make the opening as wide as possible. When he performs the capsulotomy in the first stage of the operation, he thrusts his knife far behind the iris, and moves the point rapidly from the base to the top, obtaining a large capsular opening; if necessary, using artificial light to show that he has done his work completely.

- 2. The cutting of the semi-elliptical section, which he considers indispensable, presents serious difficulties. After the counter-puncture the iris is often projected forward, and consequently may be wounded. To avoid this, the shape of the cut should be made slightly oblique, at the same time bringing the edge of the knife as far forward as possible.
- 3. The exit of the crystalline lens presents difficulties, as sometimes it does not present in the wound after what seems to be a proper section. This can only be accomplished by making a slightly larger flap, which is done by bringing the puncture and counter-puncture a little nearer to the horizontal diameter and the sclerotic border.
- 4. Rupture of the iris may take place, which he thinks can be avoided by disengaging the two angles of the wound and pushing back the iris with a small blunt probe made of gold. If the iris has been much contused during the delivery of the lens, he performs a sphincterotomy.

#### PALPEBRAL ECZEMA.

TROUSSEAU (Recueil d' Ophthalmologie, May, 1893) recommends in cases of aggravated eczema the use of antiseptic treatment in the daytime, and at night a poultice of rice fecula made

under the conditions of perfect asepsis. the eczema oozes a good deal there should be antiseptics used by day, and at night an application of powder composed of bismuth, oxide of zinc, or boracic acid. Fissures should be touched with a brush dipped in a three-percent. solution of nitrate of silver. If the irritation is violent, compresses steeped in alcoholized water should be applied to the eyelids, or they should be sprayed with carbolized water one-half per cent. and sulphate of quinine given internally. Menthol salve may be used with success, but it is too severe, except in torpid cases free from irritation. Ointments should be used only in the last period of eczema, at the time when a fine desquamation sets in, and only with the greatest care. Nothing is more difficult than to definitely indicate an ointment for palpebral eczema. The least irritative ointments should always be tried first. This is the scale which Trousseau adopts: Pure white vaseline, fresh lard, so highly recommended by Brocq, bismuth, oxide of zinc, ichthyol, yellow oxide, and oil of cade. The antiseptic treatment, in his opinion, is always the foundation, and he believes that any antiseptic of the same strength as sublimate would succeed as well, and that some other one less irritating and with the same degree of activity would be preferable. He believes that the part played by antiseptics in the cure of palpebral eczema is important, not only from the point of view which ascribes a parasitic origin to eczema, but also from that which looks upon it purely as a local disorder requiring local remedies.

He regards his contribution to the treatment of palpebral eczema as a plea for the acceptance of the parasitic origin of eczema, an origin which the present French school is much disposed to accept in certain eczematous conditions which Unna describes under the name seborrhœic eczema, and which really includes most of the forms of palpebral eczema.

#### REMOVAL OF THE LACHRYMAL GLANDS.

H. Truc (Archives d'Ophthalmologie, May, 1893), writing concerning the indications for the removal of the lachrymal glands, concludes that removal of the lachrymal gland is an opertion which merits consideration in the therapeutics of simple or complicated epiphora, and those cases which are obstinate to the usual means. It is an operation to be held in reserve and as a last resource. Palpebral removal is an operation of choice. It is suitable for simple cases and for the greater number of compli-

cated cases. Orbital removal is an operation of necessity, and is applicable to complicated cases of extensive conjunctival disease, and in certain cases of serious blepharitis with hypertrophy of the mucous membrane and marked ectropion.

### STATISTICS OF OPERATIONS, WITH REMARKS.

DR. A. TROUSSEAU (Bulletin de la Clinique Nationale Ophthalmologique de l'Hospice des Quinze-Vingts, 1892; Paris, 1893), during the course of his clinical service at the Quinze-Vingts in 1892, performed four hundred and fifty-two operations, as follows:

Cataracts	234
Secondary cataracts	12
Sclerotomies	3
Iridectomies	62
Enucleations	16
Staphylotomies	6
Strabisotomies	33
Operations on the eyelids	42
Operations on the lachrymal ducts	14
Diverse operations	30

Throughout the year he has used his simplified process for cataract extraction, which consists in using a knife as the only instrument, and absolutely rejecting forceps and blepharostat. By this means, in his opinion, he lessens the chances of infection and of giving pain. He is a firm believer in simple extraction, and thinks that all attention should be given to suppressing the most important accident of this operation,-namely, hernia of the iris. His statistics are clear from panophthalmitis, but not entirely from infectious symptoms, as he has had one case of purulent irido-cyclitis in which he was able to check the process by warm compresses of sublimate and repeated instillations of atropine, but was not able to preserve vision. He lost one eye from intraocular hemorrhage, which began five or six hours after operation. The next day the coagula were removed and the eye dressed antiseptically, and although it atrophied and became sightless, it was satisfactory in appearance; hence he does not believe that immediate enucleation is justified in case of vitreous . hemorrhage after cataract extraction. If possible, he operates by extracting congenital cataracts after a preparatory iridectomy. He does not do secondary operations frequently, and strongly urges complete antisepsis and avoidance of irritation to the iris. He is ready to indorse discissions if a sharp knife be used instead of a cystotome. He sometimes performs inferior iridectomy in case of obstruction of the pupil by thick masses or by capsuloiritic débris.

Only three sclerotomies appear in his list performed on glaucomatous eyes, because he believes sclerotomy is always inferior to iridectomy, and that it should be used only as a secondary operation. Iridectomy, in his opinion, is indicated for acute or subacute glaucoma, but is useless in chronic glaucoma. He thinks it is questionable whether iridectomy is beneficial when directed against chronic synechias or repeated iritis. He does not believe that it prevents relapses, and he has seen diminution of visual acuity follow its performance. Two iridectomies performed with the object of arresting the progress of corneal staphyloma, failed to give the desired result.

It is his custom to perform few enucleations, confining himself to the removal of such eyes as are positively lost, or are very painful, or likely to produce sympathetic inflammation. In cases of serious traumatism, with extensive disorganization of the globe, he never enucleates immediately. A complete antisepsis of the wound area is effected, and he has been astonished to find what a satisfactory appearance such an eye may assume after several weeks of care and dressing.

The following is his method of operating for staphyloma: He begins by completely detaching the conjunctiva all around the staphylomatous cornea, then passes threads through the edges of the conjunctiva, which later on are He then punctures the knotted together. staphyloma at its base with the knife and transfixes it, while he directs his attention to the top, cutting a section qualified to supply the loss of substance which will be created by removal of one or both portions of the staphyloma, evidently of that one the preservation of which seems most difficult or least advantageous for the ultimate appearance of the eye. In the cases which he has previously described he removed an inferior portion of the cornea close to the sclerotic, preserving above a large expanse of the membrane, so that when brought in contact with the inferior corneo-scleral limb it stops up the orifice left by the removal and adapts itself to this border. He does not try to make corneal sutures, but confines himself to closing the gaping wound by applying to it the preserved portion of the cornea, which is easily effected by pressing the conjunctival sutures so that the traction exerted by the threads gradually reduces and flattens the corneal section. When the operation is finished, the cornea is completely covered by the conjunctiva, and cicatrization is effected under the

protection of the conjunctival covering. Six to ten days later he removes, one by one, a day apart, the conjunctival sutures, beginning with the one situated beside the base of the corneal section. When the sutures are removed the conjunctiva parts and shows the cornea joined to the sclerotic and somewhat flattened. In his two cases the corneal transparency was maintained.

Capsular advancements performed for the cure of strabismus have usually been successful in his hands, De Wecker's method being preferred.

Grattage and brossage in trachoma have not yielded in his hands the brilliant results which have elsewhere been announced. He has seen improvements, but no cure. The use of Knapp's forceps has yielded him only improvements. He uses the methods, however, only in serious cases. He has had great satisfaction in treating mucocele and dacryocystitis by scraping the sac after incision and immediate union of the wound.

Dr. Valude (ibid.) contributes his experience in the same hospital. Referring to the question of chalazia, he believes that the best method of assuredly getting rid of the small neoplasm is to take it out through the skin surface and not from the conjunctival side. After the application of a Desmarres forceps he transfixes the tumor and the skin through and through, and with two cuts of a pointed scissors removes the two halves of the neoplasm. A rapid cleaning with a curette empties the little tarsal cell in the cartilage. He considers that suturing is not safe if the wound of the skin is two centimetres in length. Subcutaneous injections of cocaine render the opera-He performs practically the tion painless. same operation for sebaceous cysts of the eyebrow. It has long been the custom of many operators in this city to remove chalazia through a cutaneous incision, and always with good results.—ED.]

In operating on the lachrymal apparatus he prefers scraping of the sac in chronic dacryocystitis. He has also tried solutions of chloride of zinc very successfully. After he has opened the sac and scraped it out, he covers it with a bit of cotton dipped in iodoform. This is changed once in four days, and the base of the cavity painted with sublimate (1 to 100) or chloride of zinc. The treatment lasts fourteen days. He prefers this method to that employed by Terson, who operates through the natural channels, or De Wecker, who attempts immediate union through the skin-surface.

Referring to trachoma, he believes that the

various methods must be used according to cases,—that is, brossage, curetting, and scarifications perform wonders in some cases, but not in all. Sometimes excision, according to the method of Galezowski, is indicated. For granulations of average intensity he advocates repeated rubbing with pumice-stone, and is not willing to give up sulphate of copper.

He sides with those who believe that enucleation should be postponed as long as possible, and when operations may take its place. His opinion of sclerotomy is that it is an operation which is not very satisfactory.

He is less and less in favor of touching ulcers with the actual cautery, and quotes the expression of Snellen, that the cautery injures the cornea more than the ulceration. He makes an exception in ulcers complicated by purulent dacryocystitis which threaten the eye with panophthalmitis, and which must be stopped at any cost. Independently of these, he believes that a dry, occlusive, permanent dressing is a sovereign remedy.

He has had satisfactory results with the simple extraction of cataract, without, however, forcing the indications. He thinks that operations for secondary cataract are more to be feared than prolapse of the iris, or panophthalmitis, which occur so rarely. He prefers to attack the membrane with forceps scissors, and to perform a capsulotomy or an irido-capsulotomy, according to the case. So far as the muscles are concerned, he believes that capsular advancement combined with tenotomy is sufficient for most cases.

#### ASEPSIS IN THE OPHTHALMIC DEPART-MENT OF THE WÜRZBURG UNIVERSITY.

STROSCHEIN (Graefe's Archiv, XXXIX., Part I., p. 256) describes the method of asepsis in the Ophthalmic Department of the Würzburg University. His article, as abstracted by Mr. Story in the Ophthalmic Review for May, 1893, follows:

Antiseptics are of but doubtful value in ophthalmic surgery, as the conjunctiva and cornea, the parts to be disinfected, do not tolerate the usual solutions sufficiently for satisfactory disinfection. The best and most popular antiseptic is corrosive sublimate, in solutions of from 1 to 5000 to 1 to 4000. This, according to Weeks, destroys the pyogenic staphylococci and streptococci in from two and a half to three minutes. But irrigation of the eyeball for such a length of time produces injurious effects on cornea and conjunctiva, and it is probable that

the time required to destroy the cocci in a mucous membrane must be considerably greater than in a test-tube.

The fact that excellent results have been obtained from irrigation with boric acid, whose antiseptic action is hardly greater than that of salt solution, renders it probable that the other antiseptic solutions employed produce their good results, not by destroying the septic germs, but merely by washing them away. The results of irrigation with sterilized salt solution are, that if the conjunctiva contains many germs, their number is greatly reduced, and if it contains but few germs, hardly any can be detected subsequently. Complete disinfection cannot be obtained by either salt solution or antiseptic lotions.

For non-cutting instruments, boiling in salt solution is the best antiseptic, but cutting instruments have their edges rapidly spoiled by this treatment, and it is sufficient, in their case, to rub the instruments with cotton-wool soaked in a mixture of equal parts of alcohol and ether, subsequently washing them in five-per-cent. carbolic acid solution.

Stroschein has found only three out of twelve Graefe's knives (taken straight from the instrument-makers when they had been sharpened) perfectly free from germs, but has found the same instruments, days after use (followed, of course, by disinfection), perfectly sterile. A similar observation was made in the case of other cutting instruments,—viz,—iridectomy-knives,—but four out of five Beer's knives in use were found infected. He accounts for the absence of sterility in the Beer's knives by the presence of the maker's stamp on the blade of the knife. This unevenness prevents perfect cleansing of the instrument.

Experiments were made with Graefe's and Beer's knives as follows: First, the instrument was infected with pus, or cultivations of pyogenes aureus, or of another resisting bacillus. It was then left to dry, and subsequently disinfected by rubbing with wool soaked in a mixture of equal parts of alcohol and ether and a few drops of ammoniac; after this it received a fresh rubbing with another piece of wool soaked in five-per-cent. carbolic solution, the handle being similarly treated, and it was finally left in sterilized salt solution. This treatment produced perfect asepsis in every case, except in that of some of Beer's knives, for the reason mentioned earlier.

The operator must disinfect his hands before he disinfects his instruments, by hot water and soap and nail-brushes, followed by washing in alcohol and corrosive sublimate solution, without subsequent drying. All solutions, cocaine, etc., are to be sterilized by boiling, and all dressings by steam. The patients are washed the day before operation, and the eye to be operated on bandaged up with corrosive sublimate solution as a wet dressing. Immediately before operation the lids are well washed with soap and sterilized water, very special attention being given to the cilia and the lid Complete disinfection of the cilia seems impossible, but painstaking washing with sterilized salt solution effects as much as can be done by antiseptics. The conjunctival sac is carefully and somewhat forcibly washed out with sterilized salt solution before the operation, and also afterwards, in order to remove blood-clots, etc. The dressings are either dry or soaked in the same salt solution. In cataract cases both eyes are bandaged, and the dressings changed in from six to seven hours after the operation.

Since the above method has been adopted at Würzburg the results have been most satisfactory,—as free from sepsis as under most rigorous antiseptic treatment, and with less unpleasant reaction than is experienced when corrosive sublimate is employed to disinfect the conjunctiva and wound surfaces. The bandages are usually discarded on the third day, and the average length of treatment in forty-seven cases was not more than ten days,—i.e., the patients were discharged on the tenth day.

#### WHAT BENEFIT CAN EAR PATIENTS DE-RIVE FROM NASAL TREATMENT?

- H. GRADLE (Journal of the American Medical Association, June 3, 1893) arrives at the following conclusions:
- 1. Acute suppurative inflammation of the middle ear, if not treated, has a tendency to become chronic, the tendency increasing with the age of the patient.
- 2. Chronic suppuration of the middle ear rarely heals without ear treatment. Neither acute nor chronic purulent ostitis are influenced by nasal treatment, but the liability to relapses after their cure is decidedly lessened by the removal of naso-pharyngeal anomalies.
- 3. Acute catarrh of the middle ear will generally terminate in complete recovery under aural treatment and sometimes even without it, provided there are no persistent nasal or pharyngeal lesions. But when these are present the disease is more likely to become chronic in spite of aural treatment, and in many instances can either not be cured, or, if improved, will

speedily relapse unless the normal state of the nose and throat is restored.

4. Proliferating or adhesive disease of the middle ear is the consequence of retro-nasal catarrh, and its course is determined by the course of the disorder causing it. Aural treatment alone is practically useless in this form of trouble, while nasal treatment, if successful so far as the catarrh is concerned, will also arrest the ear-disease. The restitution of hearing, however, depends on the length of time the disease has lasted, and is often aided by ear treatment after the cure of the retro-nasal catarrh.

#### THE TREATMENT OF SENSITIVE SPINES.

LOVETT (Boston Medical and Surgical Journal, vol. cxxix., No. 2) does not give a better name for the disease the treatment of which he describes than that given in the title of the abstract. He states that it appears as a sensitive and painful condition of the spine, manifested by sensitiveness most often over the spinous processes of the vertebræ, pain on motion and manipulation, and by the general symptoms of neurasthenia. Although the condition is evidently not due to organic change, it persists for years, varying but little, and leading generally to a bedridden and helpless condition in the severer cases. Usually it is possible to trace the beginning of the cases to some injury; in other cases there seems to be no traumatic origin, yet the same symptoms. The injury is usually a fall, or more or less severe jarring of the spinal column. In some cases it begins slowly, perhaps after some exhausting disease. At times this pain and sensitiveness spread over the whole back, but mostly it is limited to a certain area over the vertebral column. It may be cervical, or it may be confined to the sacrum and coccyx; and a fairly common situation is over the sacro-iliac joints, but the most common appears to be in the dorsal or lumbar region. The sensitiveness is apparent to both deep and superficial pressure. It is often sharply localized, and the pain is generally limited also to the area affected. Standing aggravates the pain, as do also riding in a carriage or car, and sitting in an uncomfortable chair, so that relief is sought by recumbency. At times the pain persists during recumbency, but even in these cases it is made worse by sitting, standing, or walking. spine is perfectly flexible, but motion may be voluntarily restricted in certain directions on account of the pain caused. In the severer cases the spine may be, and generally is, held

quite rigid over the affected area, either by voluntary or involuntary muscular effort. There is no angular deformity, such as one finds in Pott's disease, although unnatural attitudes may be assumed on account of the sensitiveness, such as a rounding out of the whole back in the dorsal region or a slight lateral deviation. The most important local condition is that of muscular weakness, both general and of the spinal muscles. It is to be noted on inspection and by measuring the strength of the muscles of the back by manipulation. theory of muscular weakness explains the pain, on the supposition that, in the absence of proper muscular support, the body-weight comes more upon the posterior spinal ligaments, and the fasciæ and aponeuroses of the back, than it should, and that this is the immediate and primary cause of the pain. Just as in flat-foot, when first the muscular support gives place to ligamentous support, intolerable pain is to be felt in the ligaments. This does not and cannot be assumed as the cause of every case of spinal sensitiveness, for it occurs at times in patients with muscles of normal strength, as measured by an apparatus for testing the back muscles.

The general condition of these patients is of the utmost importance and significance. In most cases they show marked neurasthenia. They are, for the most part, young and middleaged women of nervous temperament and poor development. As a general rule, they are badly nourished. They walk feebly and stiffly, and often they are entirely bedridden.

As to treatment, the severer cases and those in which the general condition is markedly poor should be put to bed for some time, and treated by the Weir Mitchell plan of rest and feeding. This is indicated both as a means of improving the general condition and also to quiet and rest the irritated spinal ligaments by removing the strain from them. The patients are kept entirely recumbent, and made to use the bed-pan in the more severe cases. They are fed every hour or every two hours, taking in the twenty-four hours eight to fourteen eggs, besides milk, beef-tea, and meat. They are massaged gently every second day; and after a few days of this treatment, the use of faradic electricity is gradually begun on the day when massage is not given. The back is excessively sensitive, and the current is mildly applied, avoiding at first the sensitive spots. Massage and electricity rapidly diminish the sensitiveness of the spine.

After a continuance of this treatment for days or weeks, according to the general condi-

tion of the patient, she is allowed to sit up in an easy-chair for five minutes, with the back supported; and then the time is rapidly increased.

At this time it is common to begin with exercises calculated to develop the erector spinæ These exercises have invariably in Lovett's hands aggravated the pain, which is generally much diminished by the recumbency. The exercises prescribed are arch flexions of the spine when sitting; then resistance is offered to backward flexion of the trunk, with the arms behind the head; and, finally, when the patient is much stronger, she lies on the face, and the feet are held while, with the arms on the hips, she flexes the trunk. It is merely a question of prescribing easy motions which cultivate the erector spinæ muscles, then addressing motions particularly to the region most affected, whether cervical, dorsal, or lumbar. One of the most successful cases that the author has treated in this way was a young woman, in whom the pain and sensitiveness were limited to the sacrum and coccyx; and it required the most intimate knowledge of the Swedish movements on the part of the masseuse to apply them so as to reach the proper muscles.

As the exercises are prescribed the patient is encouraged to walk a little; and if spinal motion is very painful, a supporting-brace is allowed, which consists of a steel waist-band and two tempered steel uprights fastened to shoulder-straps. This is used merely to support the spine until the muscles are able to do so, and is to be regarded as a temporary measure, to be abandoned at the earliest possible moment. The patient is gradually encouraged to do more each day, without regard to her sensations, except during menstruation, when she is kept in bed.

Personally, the writer, in cases where there is any question of uterine trouble, always has an examination made by a gynæcologist, to be sure that no uterine displacement exists which might cause the backache. The patient is encouraged to progress as fast as may be, and to leave invalid ways behind her. The treatment is, in a word, first, rest, and then muscular development, in connection with the most effective measures addressed to the general condition.

But a great many patients do not need such stringent measures as these, nor, on the other hand, can every one give up entirely for weeks or months; a treatment which can be pursued at home, and which is perfectly suitable for lighter cases, must be found. These patients should be encouraged to lie down, at least part of the day; even working-people can save two or three hours

by going to bed early. If possible, they should lie down both morning and afternoon, and should get up late. In short, the same aim of resting the back should be kept in mind as in the severer cases, and this should be accomplished in every way.

In such cases the elastic brace should be applied almost as a routine treatment; and in severer cases a rigid steel back-brace to prevent spinal motion when the sensitiveness is severe, taken off only for exercise.

The general condition is most carefully looked after, the bowels are regulated, the appetite is stimulated, and eggs (from six to ten daily) are prescribed, often with a little alcohol. Walking and riding are almost invariably painful, and it is always a question how much of these exercises should be done. It seems best at first, during the period of rest, to limit them as much as possible, and to increase them very gradually, laying the chief stress upon exercise devoted to the muscles affected.

Many patients cannot afford, or for some reason cannot have, massage and electricity, and yet they do well, only they progress more If attainable, these means of treatment are of the utmost importance. douches to the spine have often been of use in such cases. The exercises are the same as those used in the severer cases, and for the best results the cases should be in the hands of some person skilled in massage and Swedish gymnastics. The tendency is certainly to err on the side of encouraging these patients to do too much, to walk too far and to over-exercise, and one has to remember continually how great is their disability and how carefully they must be handled.

The brace is gradually discontinued, the amount of exercise increased, and the period of recumbency diminished. It is the same plan of treatment as before,—first, rest, and then graduated and progressive exercise,—and these are no more important than is the general routine of treatment addressed to the general neurasthenia; either alone accomplishes little.

### THE HÆMOSTATIC PROPERTIES OF PUFF-BALL.

HALL (Medical Record, No. 1186, 1893), some five years ago, was called to see a case of epistaxis occurring in the third week of typhoid fever illness. Ice, persulphate of iron, and compression did not give relief; plugging was not entirely successful, owing to the fluidity of the blood permitting oozing to occur in spite of

this measure. A puff-ball (Lycoperdon giganteum) was then applied in pieces and stuffed loosely into the nares, the cotton plugs being reinserted. Hemorrhage ceased at once and did not recur.

A second case of nose-bleeding yielded at once to packing of the nares with puff-ball, without the addition of the cotton plugs.

In a third case of bleeding after extraction of a tooth, puff-balls seemed to give better results than styptic cotton, adhering more quickly and firmly than did the latter.

#### THE STRONGLY COUNTER-IRRITANT EFFECTS OF THE USUAL MAS-TOID OPERATION.

BUCK (Medical Record, July 29, 1893), though conceding that the main object in opening the mastoid process is to secure cleanliness and drainage, holds that the good effects are not confined to the benefits accruing from the attainment of these ends, but that the derivative or counter-irritant influence plays a very important part in effecting a cure. In fact, in operating upon the mastoid, we may establish an issue on a comparatively large scale. A gaping wound two or three inches in length is made in the skin, and a pit large enough to admit the end of the forefinger is excavated in the underlying bone itself. This deep excavation may be left gaping, and afterwards, for a time, be treated as an open wound. If there is any virtue in the principle of counter-irritation, the beneficial effects that flow from it will be provided in liberal measure to the patient thus operated upon. In those cases in which disease of the ear has set up more or less active intracranial inflammation, this counter-irritant power may be sufficient to turn the scale from a fatal to a favorable issue. The histories of three cases are detailed, all of them seeming to point strongly in favor of the theory advanced by Buck. In the first two cases the intracranial lesions were very nearly alike in extent and intensity. In the one, the original centre of carious bone, with its accumulation of foul débris, was effectively cleansed, and yet the intracranial disease pursued its course, and death followed even under the influence of this drainage and cleansing. It had acquired so great an independent momentum that it no longer needed, for a continuance of its harmful course, the stimulus of the adjacent centre of middle-ear disease.

In the second case the original centre of carious disease in the middle ear was drained and cleansed; but, instead of growing worse, underwent a steady and progressive change for the better. It seems impossible to attribute this change to anything but the counterirritation furnished by the presence of an extensive issue in the immediate neighborhood.

In the third case there was, so far as could be ascertained, entire absence of any disease of the middle ear or mastoid bone; hence establishment of an issue pure and simple was the only therapeutic procedure of which there could be any question. Indisputable, too, was the existence of some deep-seated and serious disease; whether at the base of the brain, or in the sphenoidal bone, or where, was not a matter of importance. The symptoms incident to this yielded promptly and the patient recovered entirely.

#### A NEW SUGGESTION AS TO THE SUR-GICAL TREATMENT OF HEMOR-RHOIDS.

BECELAERE (Medical Record, No. 1186, 1893) proposes a method of operating for hemorrhoids which, though he has not put it in actual practice, is sufficiently ingenious to justify a trial. He bases his confidence in the efficiency of this method on his knowledge of the normal disposition of the hemorrhoidal veins which traverse the sphincter muscle and underlie the mucous membrane in about the same way as a hernial gut hangs out of the inguinal canal into the skin. If a more complete adhesion of the mucous membrane to the underlying muscular layer can be secured, thus destroying the submucous connective tissue, the conditions favorable for the formation of hemorrhoidal masses can be removed, and a radical cure would probably result. Hence it is proposed to detach in a circular manner the mucous membrane of the sphincters, turning down a mucous cuff, which should forthwith be returned to its former situation and secured by the necessary number of stitches. Ultimately there would result from this cicatricial tissue just sufficient to secure a more close approximation of the mucous and the muscular layers of the lower bowel, thereby destroying at once the venous loops under the mucous membrane and the connective interspace wherein they become dilated. the knife is contraindicated, perimarginal ignipuncture might be of service. This modus operandi may be performed as follows: After insuring the benefit of all usual antiseptic precautions, the surgeon should paint over the previously shaved regions a sufficient coat of

simple collodion, which he should allow to thoroughly solidify before proceeding any further. This is an excellent means of avoiding the disagreeable effects of radiating heat. A metallic dilator of convenient size, and filled with cold water, may further be inserted within the anus of the patient, postured in the exaggerated lithotomic decubitus. The surgeon then slowly passes the smallest point of a thermo-cautery, at a brown heat, right underneath the mucous membrane of the rectum. until the upper sphincter is reached. Withdrawing the instrument, he may reinsert it at another point, about a centimetre, or half an inch, distant from the previous puncture. It is a question to be decided only by actual experience how many punctures may thus be made at one sitting; although a priori no reason seems apparent for not completing the whole operation. A large-sized galvano-caustic needle, constructed ad hoc, might prove more useful even than Paquelin's instrument, because it could be introduced with the finger in the rectum, the necessary current being turned on with the cautery in situ, thus avoiding the danger of perforating the mucous layer.

#### ANTISEPTIC VARNISH-STERESOL.

Berlioz (Journal de Médecine et de Chirurgie Pratiques, tome lxiv., 64 année, 4 series) prepares an antiseptic varnish, which he terms steresol, by mixing the following ingredients:

R Purified shellac, 270 grammes;
Purified benzoin, entirely soluble in alcohol, 10 grammes;
Balsam of Tolu, 10 grammes;
Crystallized carbolic acid, 100 grammes;
Chinese essence of canella, 6 grammes;
Saccharine, 6 grammes;
Alcohol enough to make a litre.

This dressing is employed in regions which cannot be bandaged in the ordinary fashion.

A METHOD OF APPLYING PRESSURE TO THE SEAT OF A FRACTURE FOR THE PURPOSE OF BRINGING THE BONY FRAGMENTS INTO ACCURATE APPOSITION AND RETAINING THEM THERE UNTIL CONSOLIDATION HAS TAKEN PLACE.

MONKS (Boston Medical and Surgical Journal, July 20, 1893) describes a very ingenious and simple method of treating fractures the deformity of which exhibits an inveterate ten-

dency to recur. This consists in wrapping the limb in a layer of cotton sheeting, and applying over this a light plaster-of-Paris bandage. The bones are then moulded into position by traction and digital pressure, the latter being exerted upon the outside of the plaster bandage. This pressure is continued while the plaster is hardening. When the latter has firmly set, the bones have no tendency to slip out of place.

#### HOW SHOULD THE GENERAL PRACTI-TIONER DEAL WITH STRANGU-LATED HERNIA?

GERSTER (Boston Medical and Surgical Journal, July 20, 1893) holds that the conduct of the general practitioner in dealing with a case which may possibly be, or is, strangulated hernia, should be regulated in accordance with the following rules:

- 1. In cases of uncertainty give the benefit of the doubt to the assumption that an obscure tumor of the groin is a hernia.
- 2. Be gentle in attempting taxis, and do not spend too much time over it.
- 3. Be thoroughly aseptic in herniotomy, and divide the constricting bands freely, not with the probe-pointed knife cutting from within outward, but with the scalpel under the guidance of the eye, from without inward.

### INTESTINAL ANASTOMOSIS BY A NEW METHOD

CONNELL, in the Journal of the American Medical Association for July 29, 1893, published the description of an original method he has devised of intestinal anastomosis without plates and with but two knots. The bowel having been severed, or a portion resected, and the cut ends having been invaginated or closed with silk sutures, the subsequent steps of the operation are as follows: The closed ends are passed by each other, and an opening of any length desired is made in the convex border of both the proximal and distal end of the intestine. The opposing walls are then placed side by side, so that the incisions are parallel with each other. The work is facilitated by a suspending thread or loop run through the bowel at each end of the opening, and held by an assistant. To insert this thread for suspension, the needle is passed from within outward through the walls of one portion of the bowel and over to the other, passing the needle from within outward; then both ends are brought. up through the openings and tied. Wher

there is a tendency to great eversion of the margins of the openings, or when there is an unusually long incision, a third suspending thread inserted midway between the other two will be of added assistance.

As the assistant applies gentle tension or traction to these suspending loops, the opposing serous surfaces are brought into perfect contact, and the first suture can be quickly inserted. This is of looped stitches, made by inserting the needle from without inward through the bowel wall, at the right end of one opening, then passing it back and forth through all coats of both walls which are in apposition until the full length of incision has been secured; the needle is then passed from within outward through the bowel wall at the opposite end of the opening, leaving each stitch as a loop on the side where taken, or each alternate stitch may be loose, thus having the loops all on one side.

The middle suspending loop is next withdrawn, if inserted, and the sutured walls separated as far as the looped stitches will allow; the knotted ends of suspending loops down through the middle are drawn up on the other side, thus bringing the serous surfaces of the other two opposing walls in apposition.

A second suture is then inserted in the same manner as the first, with the exception that no loops are made, all stitches being drawn tight.

Next all suspending threads are withdrawn, and the loops of the first suture are drawn up, the ends of both sutures are pulled taut and tied, not cutting off the ends of sutures after making the first knot until the second is made, as they are necessary in making traction.

After both knots are tied the ends are cut off close, so as to leave no dangling drains, and union by anastomosis is complete. When catgut is employed for suturing, the knot must be secured with a silk ligature to prevent loosening, as it becomes softened by the intestinal and serous fluids.

#### THE RESTORATION OF SYMPHYSEOTOMY.

GARRIGUES (Medical Record, May 20, 1893), after a brief review of the history and statistics of symphyseotomy, dating the proposition of this operation to Sigault, in 1768, and giving the credit for the first symphyseotomies in this country to Dr. Hirst and Dr. Jewett, states that since January, 1886, there have been in all one hundred and twenty-two cases, of which twelve died. In this country, seventeen cases with three deaths.

By pulling on the iliac bones and bending the joints of the hips and knees after symphyseotomy, a space of two inches may be gained without injury to the sacro-iliac articulation. If the separation is carried as far as three or four inches, one or both of these joints are torn open. In consequence of the separation of the pubic bones a considerable change takes place in all the diameters of the pelvis, whereby it is rendered much more spacious in all directions on planes supposed to be at right angles through the axis.

In regard to the method of operating, Garrigues states that the subcutaneous section has the advantage of great simplicity, and of having a small wound entirely removed from the lochial discharge, and it gives rise to less hemorrhage. On the other hand, it has the disadvantage that if hemorrhage occurs it cannot be properly attended to. The open method consists in making a longitudinal incision in front of the symphysis, extending it sufficiently above the symphysis to have easy access to the latter and below to the root of the clitoris, or. deviating to the left of that organ, into the vulva between the labium majus and minus. Sometimes the symphysis is ossified or has so irregular a shape that no knife can be drawn through it. The bladder may be so compressed between the head and the symphysis that it can hardly be distinguished, and may therefore be wounded, and both bladder and vagina may be caught between the ends of the pubic bones if care is not taken to hold them back in closing the pelvis.

After having cut the symphysis, the child should be delivered at once, and this should be done according to the rule that if the head engages forceps should be used. If it is movable above the brim version should be performed. In uniting the bones all that is necessary is to put the sutures in so deeply as to include half an inch of the fibrous tissue on both sides in front of the symphysis and the pubic bones. In tying down the sutures the bones are brought together by pressure on the trochanters, and the legs should be stretched out or even should hang down on each side of the operator. The best way of keeping the bone ends together is by the use of rubber adhesive plaster, three broad strips of which are put round the trochanters and crossed on the abdomen above the wound. The wound should be dusted with iodoform and covered with iodoform gauze and gutta-percha tissue, and the dressing renewed every day, as it becomes soiled by the lochial discharge.

The patient should be lifted upon the bed-

pan whenever needed by holding her behind the trochanters. She should lie with outstretched legs, and the knees should be tied together. She should be kept in bed for three weeks.

The prognosis is extremely good for the mother and very good for the child. As a result of the introduction of this operation, craniotomy, induction of premature labor, and Cæsarean section must be abolished, while Porro's operation will be supplanted to a great extent. Even many forceps and version operations ought to yield to symphyseotomy, since these operations, performed with a true conjugate of less than three and one-fourth inches, are accompanied by a great mortality both for mother and child, or lead to idiocy in the latter.

#### CANCER AND ITS TREATMENT.

ADAMKIEWICZ (La Mèdecine Moderne, 4 année, No. 32, 1893) states that there can be no doubt that cancer is a microbian disease. The parasite, although not positively identified, is a protozoa, and either a coccidia or gregarine. It is well known that every organism perishes if saturated with its own products of elimination; hence cancer is destroyed by the ptomaine, developed as a result of its own activity. This ptomaine has been called by Adamkiewicz "cancroine," and is analogous to the cadaveric neurine, having a chemical composition of  $C_c H_{12}NO$ .

If neurine is injected in a man affected with cancer of the lower lip, that lip swells, the tumor suppurates, and if the injections are systematically continued the tumor disappears. Corresponding with this disappearance, the glands lessen in volume. It is certain that neurine acts directly on the cancerous tissue.

#### THE TREATMENT OF TETANUS.

BERGER (Revue de Thérapeutique Medico-Chirurgicale, 60 année, No. 11) reports three cases of tetanus cured by vigorous surgical intervention. This intervention in one case took the form of amputation of the finger; in another of extirpation of the phalanx; in the third, repeated disinfection by means of curette and scissors.

Berger contributes his present statistics, reporting fifteen cases of tetanus, thirteen treated by ordinary methods, and all resulting fatally; two treated by amputation, both recovering; but he concedes that this is simply a coinci-

dence, since amputation cannot be considered as an infallible proceeding, but rather as a means of suppressing a focus of infection. The best that can be said for this procedure is that it places the patient in the best condition for a cure. As for the antitetanic injections, Berger holds that they have no curative value, though it is possible they may act as preventives. A letter of Treille is cited, quoting the experience of Range, who treated, at Dahomey, two cases of tetanus by antitoxine, both resulting fatally.

Preventive injections made in a certain number of cases were not successful in averting the disease.

In regard to amputation, Berger holds that the decision as to whether or not this operation should be performed must depend upon the severity of the particular attack of tetanus, upon the failure of other methods, upon the importance of the sacrificed member, and, finally, upon the extent of the wound. The operation does not sensibly affect the prognosis.

### IMMEDIATE UNION AFTER DIVISION OF ANAL FISTULA.

In L'Union Médicale, 47 année, No. 59, Bazy, apparently on the basis of a case which terminated unsuccessfully, strongly advises immediate reunion after excision of anal fistula. He proceeds to give an elaborate description of his technique, but until further evidence is afforded as to the probability of a fair percentage of successes following this operation, the majority of surgeons will be content, we think, to allow healing from the bottom by granulation, though immediate union, were this possible, would be highly desirable.

### MENTHOL IN ITCHING AFFECTIONS OF THE SKIN.

COLOMBINI (La France Médicale, 40 année, No. 22) states that though the antipruriginous properties of menthol are becoming thoroughly known, the difficulty of properly regulating the dose has prevented the application of this remedy. He strongly advocates this drug in cases of eczema of the scrotum, vulva, etc. He uses the following formulæ:

R. Menthol, 5 to 10 grammes; Alcohol, 100 grammes.

Or,

R Menthol, 10 grammes;
Oil of sweet almonds, 10 grammes.

Or,

Quide of zinc, 25 grammes;
 Starch-powder, 25 grammes;
 Vaseline, 50 grammes;
 Menthol, from .5 to .8 gramme.

Or,

R. Oxide of zinc, 10 grammes; Subnitrate of bismuth, 10 grammes; Menthol, 1 to 3 grammes; Starch-powder, 1 to 30 grammes.

When the application is to mucous surfaces the mixture should be weakened somewhat in menthol, since otherwise there is a painful burning sensation.

#### DIAGNOSTIC AND THERAPEUTIC VALUE OF PUNCTURE OF THE SPINAL CANAL, ACCORDING TO THE METHOD OF QUINCKE.

According to La Médecine Moderne, 4 année, No. 32, 1893, QUINCKE has made in all fortyone punctures of the spinal canal in twenty-two cases. In many instances the benefit of this procedure was extremely transient. The normal cerebro-spinal fluid should vary between 1000 and 1009 in specific gravity. It should contain 1 part of albumin to 2000 of water. In cases of chronic hydrocephalus the fluid is not materially altered. When the amount of albumin reaches 2 in the 1000 an acute inflammation may be suspected. In one case of tumor involving the posterior part of the brain, 5, and even 7, parts of albumin were found to the 1000. The normal intraspinal pressure of the fluid is 150 millimetres of water. In pathological subjects this pressure sometimes reaches 700 millimetres. Puncture is particularly valuable from a therapeutic stand-point in cases of acute exudation. An effort was made to establish permanent drainage. In two cases there resulted ædematous swelling of the dorsal muscles and but transient improvement.

Ewald practised this procedure in two cases of grave hydrocephalus; the ordinary hypodermic needle served for the purpose of puncture. There was brief and marked improvement.

Sahli treated three cases of tubercular meningitis by puncture, but without marked effect, either immediately or remotely.

Naunyn made seventy-one punctures in seven cases. In one there was no exudate. Autopsy showed that pus was present here. Relief of headache was noticed in some of these cases.

Ziemssen practised these punctures in two cases consecutive on meningitis; the maximum quan-

tity of liquid removed was ninety centimetres. It was quite clear. In one case of a similar nature, relieved at first, recurrence followed in three days, requiring a repetition of puncture. The ordinary effect of these punctures is a very markedly diminished headache. At times the effect is instantaneous and very striking.

Bruns endeavored to diminish intracranial pressure in three cases of cerebral tumor by direct trephining. In the first case there was a growth in the posterior portion of the brain. The whole of the posterior cerebral lobe was exposed by means of an extensive bone opera-This was followed by an enormous flow of cerebro-spinal fluid. The head pains disappeared immediately, also the difficulty with the pupil, and the patient was able to walk. Improvement continued for six months. In the second case, although there was no escape of fluid at the time of operation, pain ceased immediately. At the end of several weeks suddenly there was an enormous escape of fluid. At the autopsy a large tumor of the frontal lobe was found. In the third case the trephine opening was placed directly over the tumor, which was located in the temporal lobe. Although there was no escape of cerebro-spinal fluid, improvement was marked.

### OPERATIVE TREATMENT OF LUXATIONS OF THE ELBOW.

TILLAUX (La Médecine Moderne, 4 année, No. 32) contributes an interesting case of luxation of the elbows subject to treatment five months after injury. The arm was flexed at a right angle; there was only slight supination and pronation. No attempt was made to reduce, but the joint was freely exposed by lateral incision. There was found a particularly redundant growth of osteophytes absolutely interfering with motion. The articular extremities of the ulna and radius were resected, the triceps, which had been divided, was sewed, and the arm was dressed in a moulded splint.

Convalescence was rapid and uninterrupted, and the patient was able to execute all the movements of pronation, supination, flexion, and extension with nearly complete strength.

Quenu, in a similar case, resected, but did not get satisfactory results.

Lucas-Championnière, Routier, and others strongly endorsed the open method, but found one single posterior incision sufficient.

Berger believed in complete resections.

## TWO CASES OF CUT-THROAT TREATED BY TRACHEOTOMY AND IMMEDIATE SUTURE.

FITZGERALD (Lancet, No. 3645, 1893) successfully treated two cases of cut-throat by the application of immediate sutures to the wound and, where indicated, the insertion of a trache-otomy-tube.

In the first case an incised wound three inches long extended across the front of the neck and divided the thyroid cartilage just below the vocal The hemorrhage was slight, but the patient was collapsed. Chloroform was administered and tracheotomy at once performed, the cut edges of the cartilage accurately stitched together with silk sutures, and the external wound closed. The wound healed somewhat slowly, but the man soon showed symptoms of pulmonary trouble, and eventually died from septic pneumonia twenty-four days after the infliction of the wound. At the necropsy the original wound was found to be quite closed and the divided parts of the larynx were in perfect apposition.

In the second case the thyro-hyoid membrane was divided and the epiglottis was completely severed from the thyroid cartilage. The patient was collapsed, pale, and cold, and there was free hemorrhage, venous and arterial, which was immediately arrested by forci-pressure. Tracheotomy was at once performed, and a Trendelenburg tube introduced; the epiglottis was accurately stitched to the thyroid cartilage with catgut, the wound in the thyro-hyoid membrane closed, and the external wound closed with wire and horse-hair sutures, leaving a drainage-tube at either end. The wound was dressed with iodoform and perchloride of mercurv gauze, a card-board splint was applied to the neck, and the head was kept flexed by a cap and bandage. The patient was fed by the mouth on the next day. The tracheotomy-tube was removed on the fifth day, the drainage-tube on the left side on the sixth day, and that on the right on the ninth day. Excepting for one small area about the position of the drainagetube, healing was by first intention. The patient was discharged perfectly well twenty-one days after admission.

#### SOME POINTS OF PRACTICAL IMPOR-TANCE IN THE USE OF CURVED SKIN INCISIONS.

BEALE (Lancet, No. 3645, 1893) gives the following reasons for preferring a curved to a straight incision wherever the former is practicable.

- 1. It heals more rapidly, and for these reasons: there is really only one edge of the wound, that belonging to the flap, that is movable, the other edge being still adherent to the subjacent tissue; moreover, the flap having been stitched to the neighboring skin or held well away from the seat of operation, both edges of the wound are quite uninjured by the time the sutures are inserted.
- 2. The resulting scar is smaller, though this is only of importance in certain parts, for the skin may be incised obliquely in making a curved incision, so that the epidermis on the edge of the flap is slightly in advance of the true skin.
- 3. It fully exposes the part to be operated upon, assuming that the base of the flap is twice or three times its length, and gives the operator plenty of room in which to work.
- 4. Suturing the edges is easier than in the case of a straight incision, especially if the skin be pricked in one or two situations exactly opposite to one another before the incision is made, and often the curved wound is adapted to the shape of the part better than a straight one.
- 5. The resulting cicatrix is not over the seat of operation.
- 6. Drainage is often most perfect by inserting a tube through an incision in the base of some part of the flap, thus giving no hinderance to the primary union of the incision and preventing any possible discharge from infecting the edges.
- Incision through inflamed or diseased skin may be avoided and yet the disease be easily reached.
- 8. There need be no tension on the edges of the wound, as a flap of skin is, so to speak, loose; and if there is fear of tension, a thick suture may be passed through the base or some part of the flap and out again, and then through the skin on the other side of the incision and there fixed, thus avoiding a long suture beneath either edge of the wound.

### THE TREATMENT OF STRICTURE OF THE URETHRA BY ELECTRICITY.

Moullin (Lancet, No. 3645, 1893) announces, with the air of one just having made the discovery, that the treatment of stricture of the urethra by the application of weak electric currents seems to have lost rather than have gained in favor during the last three years. He proceeds to give his own experience with this means of treatment, embracing twenty courses of treatment in eighteen patients. With a very weak current, not exceeding two or three mil-

liampères, the only effect perceptible after half an hour's trial was a little redness around the meatus. If the strength was increased up to eight or ten milliampères the cicatricial tissue was undoubtedly softened, the surface became moist and sticky, small bubbles of gas made their appearance, the area of redness grew wider, and the stricture tissue yielded so much that sometimes after one sitting, sometimes two or three, a bougie of larger size could be introduced, and in one or two instances this improvement continued and even progressed for some days without anything more being done. The effect was closely similar to the tying in of a catheter, only it was more rapid. If catheters were not passed at frequent intervals retraction always took place, in some cases rapidly, in others more slowly.

Moullin could not find that the passage of a weak current for half an hour on some half a dozen or perhaps a dozen occasions, with intervals of several days between, effected any change in the character of the scar.

In regard to deep strictures following chronic inflammation, he is of the impression that the stricture tissue softened and yielded with more rapidity under the electrical treatment than under the ordinary treatment with bougies. This, however, is all he can say in favor of the method.

## THE TREATMENT OF TUBERCULOUS DISEASE OF JOINTS BY THE INDUCTION OF LOCAL (EDEMA.

Brown (Lancet, No. 25, vol. i., 1893) states that he has treated tuberculous disease of the joints by the production of local ædema of the affected parts in nine cases taken from among his hospital patients. On the basis of this experience he is not able in any way to confirm the favorable report given by others. The cases were daily under observation for one month, and the treatment was carried out in strict accordance with the description of Page. At first a slight improvement took place, but this may be fairly attributed to rest in bed and better surroundings. The pain produced was not great and the results were entirely unsatisfactory.

### AFTER-TREATMENT OF CASES OF ABDOMINAL SECTION.

MARTIN (Birmingham Medical Review, vol. xxxiv., No. 179) states that after abdominal section it is necessary to drain the peritoneal cavity where there is peritonitis or ascitic effu-

sion; where during the operation the peritoneum has been soiled with fæcal matter, urine, pus, or offensive contents of tumors; where the abdomen has been washed out; where extensive adhesions have been broken down; where, from any cause, free oozing of blood is taking place into the peritoneum; where there is reason to believe the bowel or bladder has been injured.

It is a wise precaution to insert a tube where. even though there be no hemorrhage at the close of the operation, it is likely to occur afterwards. The tube should be of stout, tough glass, sufficiently strong to resist the pressure incident to vomiting after operation. It should be opened at the lower end; its side should be perforated at frequent intervals, the holes extending almost to the top of the tube, and the upper extremity should be flanged. The bottom of this tube should reach the bottom of Douglas's cul-de-sac, and its value is that it acts as a sentinel, indicating the onset of severe internal hemorrhage in time for its prompt treatment; that it is a potent hæmostatic, checking free oozing by enabling the blood effused to be at once removed, and by admitting air to the raw surface and keeping it more or less dry. If necessary, astringent solutions may be injected down the tube, in order to act directly on the source of bleeding; that it prevents peritonitis by the removal of fluid; and that it is a curative agent in ascites due to peritonitis or papilloma of the peritoneum. When the intra-abdominal fluid is bloody it is advisable to employ a "sucker" with a tube, and indeed this adjunct to drainage should be employed whenever the tube is The evils of the drainage-tube are:

- 1. If it be retained longer than a few hours it undoubtedly prevents primary union at the site of its insertion. After its removal, the aperture heals by granulation. At most, however, this means only a delay of a very few days.
- 2. If the drainage-tube be retained many days, there will be a greatly-increased risk of the subsequent formation of a ventral hernia. The site of the tube remains as the weak spot in the line of the cicatrix.
- 3. It may break during vomiting. This can only occur where a very thin, fragile tube is used.
- 4. If the tube used be too short and have no circular rim, it may slip wholly into the peritoneal cavity. When the nurse goes to drain the tube, she finds that it has disappeared and the wound has closed over it. To remove it, the surgeon must take out a stitch, pass his finger into the abdomen, and feel for the tube.

It is usually easily discovered and brought to the surface. Should this fail, an anæsthetic must be given, the abdomen reopened, and a thorough search made for it. It is an accident that cannot happen if the tube be provided with a wide rim.

5. If too long a tube be inserted, the lower end rests on the rectum, while a considerable portion projects beyond the skin. Should the binder or bandage be applied very tightly, the tube is made to exert injurious pressure on the rectum, and may even punch a hole in it. In applying elastic pressure to the abdomen, care must be taken to arrange layers or pads of cotton-wool around the tube in such a way that no pressure is made by the binder directly on the tube.

6. The tendency of the omentum to protrude through the holes in the sides of the drainage-tube is very remarkable. It becomes applied to the tube, and is forced by the intraabdominal pressure through the perforations as a series of fatty herniæ. Each of these projects into the lumen of the tube as a pear-shaped mass of fat, whose narrow neck is constricted by the margin of the hole. The venous return in each protrusion is obstructed, and it becomes congested, swollen, and finally strangulated.

Hemorrhage from adhesions sometimes bleed furiously, especially when the growth has to be separated from the vessels of the liver, the mesentery, or the pelvis. This bleeding is to be controlled by ligature, forci-pressure, sponge pressure, Paquelin's cautery, and various astrin-The hemorrhage from the pedicle may come from the ligature having been tied too tightly, or from slipping of the broad ligament from within its grasp, or from bleeding into the connective tissue of the pedicle below the ligature, forming an acute hæmatocele of the broad ligament. This tends to force the ligature up over the rest of the pedicle until it slips off altogether. The hæmatocele then bursts into the peritoneal cavity, and the patient may rapidly become exsanguinated. In other cases the ligature holds, but the broad ligament becomes distended with blood to such an alarming extent as to threaten life. In cases of bleeding when the drainage-tube has been used, the symptoms become apparent at once. When the wound has been closed, however, reliance must be placed on the recognition of the signs and symptoms of hemorrhage, and of these the pulse and temperature are most indicative. The progressive hourly rise in the pulse and fall of the temperature is almost diagnostic. When the bleeding is from the

pedicle, the abdomen must be opened at once, the clots cleared out, and the bleeding-point found. In many cases it will be necessary to leave on hæmostats for twenty-four hours. If the bleeding comes from adhesions, abdominal compression may first be tried, and when the hemorrhage is from adhesions deep in the pelvis, the vagina may be plugged. If this fails, a weak solution of perchloride of iron may be injected down the drainage-tube into the pelvis. Finally, the abdomen may have to be reopened, the clots being washed out and the bleeding-points searched for. In case the bleeding comes from deep pelvic adhesions. which other means fail to control, the pelvic cavity should be firmly plugged with a long strip of iodoform gauze, the end of which is brought out through the abdominal wound. The vagina should also be tightly plugged at the same time, so as to exert counterpressure on the bleeding vessels. The gauze may be cautiously removed in about fortyeight hours.

If a broad ligament hæmatocele form, it should be let alone, as in ninety-nine cases out of a hundred the hemorrhage ceases spontaneously and the effused blood is slowly absorbed.

The general treatment is that usually given in such cases.

#### TREATMENT OF GONORRHŒA IN WOMEN.

Asch (Bull. Gén. de Thérap., 62 année, tome i. 22) treats gonorrhœa in women by uterine vincal or vaginal injections of a lotion made up of equal parts of glycerin, lanolin, and water. From two to five parts of this lotion are added to a hundred parts of water.

#### ANTISEPSIS IN URETHRAL SURGERY.

KROZIUS and CHYDENIUS (Annales des Maladies des Organes Genito-Urinaires, 11 année, t. x. 127), on the basis of more than five hundred experiments upon the germicidal value of the antiseptic agents commonly employed in urinary surgery, find that biniodide of mercury is less powerful than the bichloride, but that both the streptococcus and the staphylococcus show marked resisting power against the sublimate solution. The coli bacillus is not readily destroyed by nitrate of silver. Boric acid and permanganate of potassium have very feeble antiseptic powers. They conclude that sounds and bougies are best disinfected by nitrate of silver solution, 1 to 500, the instruments being allowed to soak for an hour.

TUBERCULOSIS OF THE PROSTATE.

MARMEDEL (Beitr. z. Klin. Chir., Bd. ix.) concludes that in one-third of all the cases tuberculosis of the prostate develops insiduously. In the remaining cases the beginning symptoms are those of prostate and vincal catarrh. Later there is purulent flow, sometimes spermatorrhea, bloody diarrhea, and abscess formation. The disease rarely appears in the prostate alone, the bladder, seminal vesicles, and testicles also being involved.

The treatment should consist of intravesical injections of iodoform, later of perineal incision of abscesses, and even of prostatotomy.

[Perineal prostatotomy in cases of tubercular prostate is not to be commended.—Ed.]

#### Reviews.

STRICTURE OF THE URETHRA. By G. Frank Lydston, M.D.

Chicago: The W. T. Keener Company, 1893.

The versatile Lydston contributes a book of three hundred and twenty-seven pages on the subject of "Stricture of the Urethra." The work is characterized by the author's customary vigorous diction, and treats the entire subject in an exhaustive manner, beginning with a careful consideration of the anatomy of the urethra, of instrumentation, and continuing with the varieties of stricture and their appropriate treatment. The work is well illustrated with a number of colored plates. The views expressed throughout the work are modern and rational, and will accord well with those of the specialist who has widest experience in this line of work.

For strictures of the meatus, division alone is advised. For strictures of the pendulous urethra, dilatation will be found disappointing, the author holding that very few strictures of this kind are ever thoroughly cured except by cutting. The only condition in which dilatation is applicable is when the stricture is young and soft. The prospect of cure of penile strictures by dilatation is directly proportionate to their distance from the meatus. Tight strictures may be dilated up to 15 or 16 and then Simple uncomplicated stricture of the deep urethra should be treated by dilatation. Recurrent, tortuous, traumatic strictures, and those complicated in other ways, should generally be cut (external urethrotomy). In the treatment of urethral fever, quinine, morphine, and pilocarpine are advised. In the traumatic

form of urethritis, aconite or veratrum viride are suggested. In the uræmic form, pilocarpine and croton oil, or elaterium, are the remedies of choice.

The various operative treatments of stricture are defined at length. Otis and Keyes are quoted extensively, as are other recognized leaders in genito-urinary surgery. The book terminates with a chapter upon fistulæ and their treatment by urethroplasty, by some remarks upon prostatic hypertrophy, and by observations on some of the local complications of stricture.

This work is most readable, and in following its teachings the student or practitioner can feel sure that he is acting in accordance with the sentiments of the most distinguished specialists in this department of surgery.

ELECTRICITY IN DISEASES OF WOMEN AND CHILDREN. By Franklin H. Martin, M.D. With illustrations. Chicago: The W. T. Keener Company, 1893.

In this book of two hundred and seventy-three pages upward of one hundred pages are taken up with a description of the principles of electrical science and definitions of the terms employed, and an enumeration of the instruments required. This is usually such an essential part of a work of this kind, and moreover is a custom so hallowed in the observance, that perhaps it should not receive comment. Still, it seems a waste of time to devote so much space to what can be learned at least equally well from the ordinary hand-books of physics.

Of course the author has modified Apostoli's treatment of fibroids, and cites cases illustrative of the beneficial effects of treatment. Unlike some enthusiasts who have written on this topic, he is willing to concede that operation may be necessary and may accomplish good results.

Chapters xviii. and xix. are made up of reports of cases successful and the reverse. It is interesting to note that in chapter xviii. thirteen cases appear, while in the nineteenth chapter—a record of failure—only six cases are cited.

The author states that we have discovered that about seventy-five per cent. of all fibroids of the uterus, because of electricity, should never be touched with the knife.

The high authority of Robert Newman is quoted in support of the treatment of strictures by electrolysis. Though it is true that Newman never carried entire conviction as to his results to the medical profession in New York, this was perhaps because a prophet is without honor in

his own country. He gives a brief section on the treatment of hemorrhoids. Galvanism is suggested in the treatment of cancer. There is a chapter on faradization, which is suggested for a variety of pathological conditions.

Chapter xxv. is headed "The S. Weir Mitchell Treatment for Hystero-Neurasthenia." The method of producing abortion by electricity is described, and a chapter is devoted to galvano-cautery surgery in gynæcology; while static electricity is discussed in due course, and is rendered attractive by some peculiarly lovely illustrations.

Finally, the book closes with a summary of treatment of general diseases of the brain, under which heading appears the somewhat ambiguous statement that "nothing yields to electricity in almost any form, as muscular rheumatism."

May the distinguished author preface yet another edition before the year is out.

INTERNATIONAL CLINICS: A QUARTERLY OF CLINICAL LECTURES. Edited by John M. Keating, M.D., LL.D., Judson Daland, M.D., J. Mitchell Bruce, M.D., F.R.C.P., and David W. Finlay, M.D., F.R.C.P. Volume I. Third Series.

Philadelphia: J. B. Lippincott Company, 1893.

In the large number of contributions made to this volume of the *International Clinics*, among the most interesting may be found one upon "The Risks of Syphilitic Infection incurred by Gynæcologists," by Dr. William Goodell; another upon "Rises of Temperature due to Diseases of the Cerebrum," by Dr. W. Hale White; another upon "The Surgical Treatment of Gall-Stones," by Dr. A. Pearce Gould; and another upon "Multiple Sclerosis, Traumatic Tremor, and Railway Spine," by Dr. F. X. Dercum.

ELECTRO-THERAPEUTICS OF NEURASTHENIA. By W. F. Robinson, M.D.

Detroit: George S. Davis, 1893.

As might be expected, this very limited subject covers but seventy-two small octavo pages. It forms, nevertheless, a very important part of the rest-cure for the relief of exhausted nervous systems. The book is written in a pleasant style, and the physician who buys it for information can in a very short space of time gain a clear idea of the subject with which it deals. The advice given at the close of the book, not to be impatient if results do not rapidly appear, is very necessary, as is also that "you commence treatment with moderation, and carefully watch the effect of electricity upon the patient's system."

RECENT DEVELOPMENTS IN MASSAGE. By Douglas Graham, M.D.

Detroit: George S. Davis, 1893.

Dr. Graham is already known to the profession as an enthusiastic advocate of the employment of massage in the treatment of disease, chiefly by his treatise on this subject, which was published in 1890. Those who desire a very brief account of this remedial measure will probably find in this book much satisfaction; but it should be clearly understood that it amounts to nothing more than a summary of the subject, and should not be purchased with the idea of learning the intricacies of what practically amounts to an art. contrary, the text illustrates the therapeutic results of the treatment rather than the methods which should be employed in its conduction. We believe that the average physician does not resort to massage as frequently as is proper, and in many cases where he does so, the results obtained are unsatisfactory through the failure to carry out some part of the method. By reading this book the physician will be able to do much to avoid such errors.

BACTERIAL POISONS. By N. Gamaleia, M.D. Translated by E. P. Hurd, M.D.

Detroit: George S. Davis, 1893.

The indefinite terms ptomaine and leucomaine. toxine and antitoxine, are so generally used in medical literature to-day that very few of the profession have clearly-defined ideas as to the mode of their production and their other characteristics. The publication of this little brochure is, therefore, peculiarly appropriate, and will no doubt interest those physicians who wish to have rational information concerning these new substances which have been discovered in connection with the bacteriological re-The book does not profess to give the technical information required by a bacteriologist, but gives the ordinary physician information which is desired concerning poisons.

TREATMENT OF STERILITY IN THE WOMAN. By Dr. De Sinety. Translated by E. P. Hurd. Detroit: George S. Davis, 1893.

The subject of this book is one upon which the physician is very frequently consulted, and a condition which in many instances he is unable to relieve. We do not find, on looking over its pages, that there is anything distinctly new proposed in the way of treatment, but it affords a brief, concise, and complete statement of the best measures which the physician can call to his aid in the treatment of such cases. Interesting statements are made in

gard to the influence of habit, climate, and intermarriage upon fecundation, and the fact that the author is not only an experienced physician, but a well-known writer, renders his views of value. The fact that the price of this series of books is but twenty-five cents enables every one to obtain them.

A CHAPTER ON CHOLERA FOR LAY READERS: HISTORY, SYMPTOMS, PREVENTION, AND TREATMENT OF THE DISEASE. By Walter Vought, Ph.B., M.D.

Philadelphia and London: The F. A. Davis Publishing Company, 1893.

This little book is supposed to describe the typical course of an attack of cholera in order that the laity may be familiar with its symptoms. It also contains chapters upon prevention, quarantine, disinfection, and a history of cholera in this country and abroad, with another upon the cause of the disease.

The illustrations of the cholera bacillus, while good, are nevertheless of very little service to the laity, who cannot possibly be expected to make a bacteriological examination to aid diagnosis.

If cholera becomes prevalent, we doubt not the book will fulfil a useful office and be widely purchased. Otherwise we fear that its mission will fail.

CHOLERA: ITS CAUSES, SYMPTOMS, PATHOLOGY, AND TREATMENT. By Roberts Bartholow, M.D., LL.D. Philadelphia: Lea Brothers & Co., 1893.

Dr. Bartholow tells us that he has prepared this little volume of one hundred and thirty-two pages at the suggestion of the publishers, during "the convalescent stage of a long and serious illness," from which the profession are glad to know that he has recovered.

The chapters consist of one upon the "History of the Disease," another upon the "Etiology of Cholera," and then follow others describing the "Symptoms," "Pathology," and "Treatment." The latter chapter occupies half of the volume, and contains brief statements of the more popular treatments accepted by European physicians during the last few years. Dr. Bartholow evidently is not as favorably impressed with enteroclysis as have been some other physicians, and believes that calomel, which has played so prominent a part in the treatment of previous epidemics, has had its reputation still further increased by recent experience. As is usual with Dr. Bartholow's contributions to medical literature, the style is direct and to the point, and the reader is not left in any doubt as to the opinions of the author.

On Snake-Poison: Its Action and its Antidote. By A. Mueller, M.D. Sydney: L. Bruck, 1893.

Readers of the Therapeutic Gazette have probably noticed during the past year a number of articles in the Progress columns of cases of snake-bite which have been more or less successfully treated by large doses of strychnine, according to the method of Dr. Mueller. That gentleman has now published a small book of ninety pages, in which he details the success which has attended his plan of treatment, and strongly urges upon the profession the value of strychnine in practically all forms of The book is an interesting adsnake-bite. dition to an important subject, which more or less directly interests both the profession and the laity, and Dr. Mueller deserves great credit for the ability which he has shown in urging the general adoption of the plan of treatment which, so far, seems to have been as successful as any yet discovered, if we can believe the reports which have appeared in the Australian journals.

QUININE IN CHOLERA. By Erskine B. Fullerton, A.M., M.D.

Columbus, Ohio: Press of Nitschke Brothers, 1893.

This is a small essay of thirty-two pages, reprinted from the *Meaical Record* of October 1, 1892, and later dates, in which the author gives his views in regard to the proper treatment of cholera, and particularly urges that quinine be largely employed in the treatment of this serious disease.

#### Correspondence.

#### LONDON.

(From our Special Correspondent.)

THE BRITISH MEDICAL ASSOCIATION AT NEW-CASTLE.

Having been for some months compelled to breathe the highly unpleasant air of this great metropolis, which has lately been rendered even more unpleasant than usual by the continued extraordinary hot weather, the anticipated change to the bracing climate of our northern town of Newcastle was looked forward to with great pleasure; nor was there any room for disappointment in the result. Although the weather might have been finer, the clerk of the weather seems to have realized how hard it would have been to expect harassed medical men to attend sectional meetings and stay

there when the temperature of the rooms was more than 80° F., and our visit to Newcastle was characterized by a general absence of sunshine and a distinct reduction in the oppressive temperature of the previous weeks. The arrangements had been so well made by the local executive committee that the meeting at Newcastle will long be remembered as one of the most successful that the Association has held.

The accommodation was all that could have been desired, and was afforded by the two magnificent colleges associated with the University of Durham,—the colleges of medicine and science. In one or other of these buildings most of the sectional work was done, while in the former were situated a convenient reception-room, with post-office, telephone-room, and a staff of type-writers, who gave their services gratuitously to members. There was also easy access to the terraced roof, from which an excellent view of the surrounding country could be obtained. Some of the rooms on the ground and first floors were also devoted to the display of the annual museum, with some of the features of which I hope to deal later on.

#### THE SECTIONAL MEETINGS.

The business of the meeting was conducted at sectional meetings, and I shall now endeavor to give a brief sketch of some of the most interesting papers and the discussions thereon.

Section A, Medicine.—The first discussion dealt with the question of chronic glycosuria in middle life, and was opened by Sir Dyce Duckworth, who seemed inclined to admit that there were many cases in which large quantities of sugar might be passed during long periods, during which signs of degeneration were so little marked, and the patients remained in such a good condition of general health, that it was difficult to say that their glycosuria was truly identical with diabetes. The discussion was followed up by Professor Gairdner, Dr. Garrett Anderson, and Dr. Shingleton Smith, each of whom mentioned cases in which glycosuria had been abundant for many years without greatly interfering with the patient's comfort. All agreed in condemning rigid dietetic restrictions in such cases, as such precautious generally seemed to do more harm than good.

At the conclusion of this discussion there was a most interesting demonstration by Dr. Geo. Murray, Professor Oliver, and others on myxœdema, with especial reference to its treatment by thyroid feeding. The cases shown by Dr. Murray were particularly interesting, as

they were some of the earliest submitted to this mode of treatment, and thus afforded an opportunity of studying the effect of time on the result. Dr. Murray gave me on another occasion an opportunity of seeing the first case treated by him, showing me photographs taken at intervals during the treatment. This patient two years ago was almost unable to walk, had lost nearly all her hair, and her speech was nearly unintelligible. She was also very deaf, and had very markedly the cutaneous affection characteristic of myxædema. first received the gland in the form of subcutaneous injections of a glycerin extract, and improvement was almost immediately observable. as shown by a photograph taken a few weeks later. When it was discovered that feeding with the raw gland, or with a few drops of a glycerin extract was equally efficacious, this method was substituted for that by injection, and the improvement went on uninterruptedly. So great is the success that the patient can now attend to all her household duties, do her own marketing, and is indistinguishable from a perfectly normal individual. The growth of hair has entirely returned, and her speech is absolutely unaffected, as well as her hearing. Two things Dr. Murray impressed me with. however. She is extremely sensitive to the least overdosage, and can only bear about 5 minims daily of Brady & Martin's extract; at the same time withdrawal of the remedy for a few days produces a very distinctly unfavorable effect on the patient, who begins to get puffy and stupid again. A most striking fact was mentioned with regard to all the cases, -viz., that there was not the least tendency to the establishment of a tolerance, the same dose having just as much effect after a long course of treatment as at the commencement, the effects of an overdose being also just as apparent at whatever stage it was given.

The Section of Pathology also had under consideration the question of myxædema. Dr. Murray detailed some experiments on monkeys. in which, by removal of the thyroid gland, he had produced the characteristic myxœdematous condition. He then supplied them with the thyroid juice of the sheep, and restored them to normal, being able to repeat the experiment at will, with constant results in the same animal. In this connection, Dr. Byrom Bramwell gave his own experience of the clinical effects of thyroid treatment, especially with reference to cretinism. His observations on these cases led him to suspect that the same treatment might be equally efficacious in various obstinate skin-affections. An abstract of his remarks will, however, be found on another page.

An admirable supplement to Dr. Bramwell's paper was afforded by Dr. Thomson, who detailed marvellous results in the treatment of three cases of sporadic cretinism. One child. a cretin, had a normal sister, who, although several years younger, was many inches taller, the brother having ceased to grow at a very early stage. Thyroid feeding was commenced, with the result that the brother began almost at once to grow, and was still rapidly diminishing the disparity between his sister and himself. Dr. Murray showed me also some interesting measurements of a similar kind. A cretin under his care had grown nearly an inch in a few weeks as the result of thyroid feeding. If there ever was any doubt in the minds of the profession as to the efficacy of this mode of treatment, all this must now be forever dispelled in presence of the Newcastle cases.

At the second meeting of the Medical Section a paper was read by Dr. C. S. Redmond on the "Cool-Bath Treatment of Enteric Fever." It will be found printed on another page. The author combated the prejudice against the cool-bath treatment on the ground that it was an heroic measure. The advantages of the cool-bath over the expectant treatment were many. It removed headache, delirium, stupor, and diminished thirst. He quoted the opinion of Dr. Hare, who, from observations on eleven hundred and seventy-five cases in Brisbane University, said that "the reason why the treatment has made so little headway in England and Australia is incomprehensible, the clinical evidence in its favor being simply overwhelming." The author preferred a tepid bath—at 87° F.—for as long a time as the patient could bear it without discomfort. diminished the fever, by direct abstraction of heat from the body. The water was warmed and the patient's body cooled in equal proportions, and, as a consequence, there was a tendency to calm rest. The intellect continued clear, the healthy action of the skin was maintained, and on the kidneys a distinct diuretic effect was produced. The mortality was reduced by fifty per cent., and this was the greatest material gain. He concluded by giving details of four cases in which recovery took place.

In the discussion which followed, the President, Dr. William Ord, said that, although he had not gone into the regular treatment of enteric fever by baths, he used the graduated bath largely in the treatment of severe cases. He always used the bath when the patient's tem-

perature reached 100° F. and was still rising. He found that delirium passed off, that in patients who had passed beyond the state of delirium into that of coma consciousness returned, and that even the presence of inflammatory conditions did not interfere with the success of the bath treatment. He thought that the bath treatment exercised a decided sedative action on the skin.

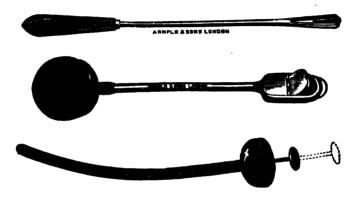
In the Section of Surgery much time was devoted to a discussion on the radical cure of hernia. The subject was introduced by Rushton Parker, who, by his large experience, was exceptionally qualified to speak with authority. His paper will be found on another page, and is a good review of the present position of the operative treatment of the disease. A paper followed by Dr. Haslam, on the surgical treatment of perforating simple ulcer of the stomach, which excited some interest.

At the second day's meeting of the surgeons the chief feature of interest was a paper, illustrated by numerous lantern slides, and read by Professor Victor Horsley, on the "Surgical Treatment of Cerebral Tumors." He said that he would take the opportunity of speaking on the subject from three different points of view: first, the treatment of the patient previous to consultation with a view to surgical interference; secondly, the objects for which surgical interference should be undertaken; and, thirdly, some new points in the technique of the opera-He premised that a case of cerebral tumor was one in which there were progressive localized symptoms. But in the clinical investigation of patients it was notorious that, before the nature of the case is known, the symptoms might be few and their localizations undiscovered. He asked the meeting to express a definite opinion as to how long one was justified in treating a suspicious case with iodide of potassium, etc., before calling in a surgeon. Under the present condition of affairs the appeal to the surgeon was generally made when it was too late to hope for cure by operation. He ventured to state that the treatment by drugs was not justified for more than six weeks, unless a most remarkable and striking improvement was manifest. It was admitted on all sides that there was no single kind of cerebral tumor which was in the least degree curable by drugs, except, perhaps, a gumma or tubercular nodules. In the case of the tubercular affection, treatment by arsenic, cod-liver oil, etc., was justifiable for a certain time, the duration of which might be longer than in the instance of iodide of potassium,-four months, for instance. He protested vigorously against the present system of

turning to operation as a last resort, instead of employing it in its proper place as a primary mode of treatment, and not secondary. It appeared to him that the only possible mode of curing even a cerebral gumma was to remove it. Of all the complications produced by cerebral tumors, there was none more sad than the melancholy feature of optic neuritis. From close observation, both in the adult and in children, he was sure that the pericranium had no osteogenetic power, and that consequently it was of no moment whether it be retained in contact with the bone or not. In cases where the dura mater had been affected it was necessary to cut it away, and it was not possible to replace the bone. He would note that where the bone had to be replaced, the practice of the American surgeons—of returning large pieces and not cutting it into small fragments-should be followed. For the removal of the bone, the most

subsequent cases submitted to the same treatment, which comprised eleven of myxœdema and three of sporadic cretinism. The following cases showed that he was justified in expecting that a similar desquamative effect would be produced by the thyroid extract in cases of psoriasis.

CASE I.—Admitted on January 13, 1893. The disease was of nine months' duration; was general over the whole body. The crusts were thick, and the subjacent skin presented a very red, angry appearance. The general health was good, but drug treatment and baths had entirely failed to influence the psoriasis. On February 4 treatment by thyroid gland was commenced, half a gland being given daily. By the 10th there was a decided improvement, and on the 14th it was noticed that the crusts on the back were being shed in large scales, leaving smooth skin underneath. By the 16th



expeditious method was, he believed, the use of the mechanical saw—made for him by Messrs. Hawksley, which he produced—and the use of powerful bone-forceps. In conclusion, he wished to make it particularly clear that the subject of the surgical treatment of cerebral growths must be approached with a determination to formulate for suspicious cases a decided line of action, and that the expectant treatment was so fraught with danger to the patient that only after a relatively brief course of treatment by drugs ought the aid of surgery to be sought.

Bramwell has been led to try the treatment of psoriasis by the internal administration of thyroid extract by the very remarkable results with regard to the nutrition of the skin which he had already obtained in cases of myxœdema and sporadic cretinism. In the first case of myxœdema which he had treated by the thyroid extract there had been in course of treatment profuse desquamation of the skin of the palms of the hands and soles of the feet, and he had noticed the same phenomena to occur in the

all the angry, red appearance of the skin had disappeared, and by March 3 the cure was mearly complete. On April 1, there being an apparent arrest in the improvement, the thyroid treatment was suspended and arsenic given, but with disastrous results. The rash at once reappeared. On April 11 treatment was resumed, 15 minims of Brady & Martin's extract being given daily. In three days there was again marked improvement. By May 3 there was nothing left save a slight pigmentation of the skin, and on weighing it was found that the patient had gained fourteen pounds in weight. He was discharged cured on June 6.

In Case II. the disease was equally extensive and of seven months' duration. This was treated by thyroid extract only. On May 105 minims were given. On the 11th the patient already found her arm less stiff and irritating. On the 12th the inflammation was possibly less. On the 13th large scales began to separate, but the appetite failed. By the 15th this was quite restored, and the improvement not being as rapid as desirable, the dose was doubled. From

this time the improvement was rapid, and the patient was discharged cured on July 14.

In Case III. the disease had been of six and a half years' duration, and notwithstanding the previous failure of all other treatment, after six weeks' of thyroid treatment the patient was practically cured.

The author had treated several other less severe cases, and, save in two instances, with complete success. In one of the failures, the patient, an epileptic, was taking large doses of bromides all through the thyroid treatment, and this may have accounted for the failure. He also knew of another failure in a friend's practice. He had also tried the treatment in a case of lupus, with considerable improvement. He hopes for equally good results in cases of acute eczema.

In the discussion which followed, Dr. Simons Eccles mentioned that he had seen a case of obstinate psoriasis improve remarkably as a result of the administration of Pöhl's spermine. He suggested that the action of all these animal extracts might be, as Pöhl thought, due to an oxidizing influence on the tissues.

In the treatment of chronic endometritis, Dr. Duke has found boric acid of very great value. It possesses the advantages of being cleanly, non-irritating, and antiseptic. Its affinity for water, while not so marked as that of glycerin, makes boric acid an excellent topical application to the vaginal walls in cases of leucorrhœa, vaginitis, etc.

Dr. Duke showed also a useful form of insufflator, designed by himself, and made by Messrs. Arnold & Sons, London, for the purpose of dusting the vaginal walls with the acid. Another instrument consisted of a hollow vulcanite tube with a tightly-fitting piston for the application of boric acid to the endometrium. Its manner of use is as follows: The cervical walls having been cleansed of all secretion by the use of Duke's cervical curette, the tube is charged with the powdered acid by being pressed point downward into a vessel full of the same, the piston being withdrawn. piston is now replaced, and the tube gently inserted into the uterus (in the same manner as the uterine sound). The piston is then pressed home, and in this way a stick of slightlycompressed boric acid is deposited in the uterus.

This application, made twice a week, has been successful in the author's hands, in curing numbers of cases of this intractable complaint. He recommends its trial in preference to some of the more severe plans of treatment which so often prove after all disappointing.

#### VOLTAIC ALTERNATIVES IN EYE-AFFECTIONS.

To the Editors of the THERAPEUTIC GAZETTE: .

DEAR SIRS:—I am in receipt of a letter from Dr. G. G. Faught, of Philadelphia, in which he claims to have been the first to recognize the value of voltaic alternatives in eye-affections, and assumes from the substance of an editorial in the Therapeutic Gazette of April 15 that I, in my article on "The Value of Voltaic Alternatives in Optic Nerve Atrophy," presented to the American Electro-Therapeutical Association, attribute the authorship of this method to Dr. Webster Fox. As the article in question was in no way historical, but purely clinical, it was not my purpose to discuss any claims of priority in the employment of this method: I simply mentioned Dr. Fox as having, by his cordial endorsement of it, impressed its value upon It was very far from my intention to deprive my friend Dr. Faught of any credit due him in this matter. I should be very glad if Dr. Faught would give the profession the result of his wide experience in this use of voltaic alternatives.

> Very truly yours, C. Eugene Riggs.

ST. PAUL, MINN.

#### Notes and Queries.

### A WARNING TO THE READERS OF OUR-

All publishers of medical journals no doubt have had the experience of submitting to the depredations of impostors who call upon physicians to collect under an assumed name, claiming to have authority to make collections.

The latest that has been reported to us is a certain Ed. E. Evans, representing himself to be an agent of the Law and Literary Exchange of Boston, E. L. Wanamaker, President.

This man called upon physicians, soliciting subscriptions for our journals, collected money for them, and made no returns to the publisher.

We cannot find that the Law and Literary Exchange, which claims an address in Boston and also one in Chicago, has an address in either city, and inform our readers that they should not pay subscriptions to unknown collectors.

# Therapeutic Gazette.

Whole Series. Vol. XVII.

DETROIT, MICH., } October 16, 1893. PHILADELPHIA, PA

Third Series, Vol. IX. No. 10.

#### CONTENTS.

# Original Communications.

Page
Some Studies on the Therapeutics of
Acute Gonorrhoea. By Edward Mar-
tin, A.M., M.D 649
Pilocarpine: Its Physiological Action
and Therapeutic Uses. With Exhibi-
tion of Specimens showing Change in
the Color of the Hair. By D. W.
Prentiss, M.D 654
Hydrogen Dioxide as an Aid in the Di-
agnosis of Sinuses, Fistula, Concealed
Pus-Cavities, etc. By W. M. L. Cop-
lin, M.D 667
Rules for the Nursing of Obstetrical Cases
as practised in the Maternity Depart-
ment of the Hospital of the University
of Pennsylvania. Compiled by Fran-
cis Lieber, M.D 668
Open Incision Tenotomy, with Report of
a Case in which the Tendon was su-
tured by the Anderson Method. By
James F. E. Colgan, A.M., M.D 670
A Study of the Influence of Chloroform
upon the Respiration and Circulation,
By H. A. Hare, M.D., and E. Q.
Thornton, M.D 672
The Climate of Western North Carolina,
with a Consideration of the Relative
Values of High and Medium Altitudes
in the Treatment of Pulmonary Tuber-
culosis. By Karl von Ruck, M.D 688

# Leading Articles.

Concerning Mild Conjunctival Inflamma-	
tions and their Local Treatment	693
Anæsthesia	694
The Treatment of Tetanus by Amputa-	
tion	695
The Use of Milk in Bright's Disease	696
Reports on Theraneutic Progre	88.

nober to our i nor aboutto a redi cor.
Disinfection in 1893 69e
The Actions of Chloroform 696
Naphtholate of Bismuth 697
Subcutaneous and Intravenous Injections
of Salt Water 697
Methylene Blue in the Malaria of Children 700
The Actions of Chloralose 700
Carbon Dioxide in Whooping-Cough 70x
About Boiled Milk 70x
Injections of Camphorated Naphthol in
the Treatment of Tubercular Adenitis 701
The Carbonate of Beech-Creosote in the
Treatment of Tuberculosis, and espe-
cially of Pulmonary Phthisis 702
The Properties and Actions of the Me-
thylamines 702
Local Application per Rectum of Aloin,
Cathartic Acid, Colocynthin, and Ci-
trullin as Laxatives 703
External Treatment of Diphtheria, 704
Prescription for Infantile Convulsions 704
Digitoxine in Heart-Disease 705

The Treatment of Hepatic Colic ...... 705

Treatment of Cancer of the Stomach..... 705

## PAGE The Use of Creosote by Rectal Injection 706 The After-Treatment of Cataract Ex-

traction	706
The Treatment of Blennorrhoea Neona-	
torum	707
Extraction of Part of the Capsule as an	

Extraction of Part of the Capsule as an	
Operative Procedure in Certain Cases	
of Secondary Cataract	7
The Use of Grafts of Skin and of Mucous	

Membrane in the Treatment of Dis-	
eases of the Eyelashes and of the Lids	707
Formulas for Conjunctival Inflammation	708
Epiphora of Intranasal Origin	709
Quinine Blindness	709

Quinine Blindness		7
İ	Should a Mydriatic be used, as a rule, in	
ı	Refractive Cases !	•

American Catheters and Bougies	710
One of the Best Applications of Iodoform	
in Surgery	712
Gastro-Enterostomy: being a Modifica-	

tion of Senn's Method	7×3
The Treatment of Syphilis by Means of	
Hypodermic Injections	716

Evanescent Urticaria cured by the Con-	
stant Current	716
Treatment of Epithelioma	716

The Value of Craniectomy and the Edu-	
cation of the Idiot Young	•

Keviews	718

Notes and Queries. The William F. Jenks Memorial Prize... 720

# Original Communications.

SOME STUDIES ON THE THERAPEUTICS OF ACUTE GONORRHŒA.

BY EDWARD MARTIN, A.M., M.D., Clinical Professor of Genito-Urinary Surgery, University of Pennsylvania; Surgeon to Philadelphia, St. Agnes, and Howard Hospitals; Assistant Surgeon, University Hospital.

\*HOUGH the subject-matter of the present paper has to do with the treatment of gonorrhœa, it is well to preface with the statement that no new remedy has been employed in the series of cases which have been studied, no specific has been discovered, and the obser-

vations founded upon a somewhat extended clinical experience have value only in so far as they tend to corroborate or disprove the efficiency of remedies and of methods which are as old as is genito-urinary surgery.

It was in a spirit of therapeutic scepticism that two years ago I began an investigation as to the beneficial effect which could be attributed to the most popular antiblennorrhagic remedies. Practically, only those drugs which have received the seal of the highest professional endorsement were used in my series of clinical observations. In one or two instances, influenced by the gaudy results of enthusiasts as reliable from a scientific stand-point as it is possible for such men to be, I departed from

the safe, beaten track into by-ways, which, as usual, instead of proving short cuts to cure, led to confusion and disappointment.

Since, for the purpose of arriving at a practical estimate as to the efficacy of a remedial measure, it is necessary to begin the investigation with a knowledge as to the course of disease when not treated, the first step was necessarily the observation of cases of gonorrhœa to whom no drugs were administered. Previous experience had long since shown that urethritis which is utterly disregarded is even more violent, more prolonged, and more frequently complicated than that subject to the varied and often vicious treatment which urethritis receives at the hands of the druggist, the experienced friend, and, too often, the family doctor.

Whether or not the oft-reiterated statement that gonorrhoea treated only by careful attention to the health of the patient, regulation of his bowels, partial or complete rest, liquid or semi-liquid diet, the administration of alkaline diuretics, runs a course as favorable as when treated by balsams and injections, was a question which required settlement before experimenting with any of the so-called specific remedies.

In all, eight cases were treated in accordance with general therapeutic principles, omitting both balsams and injections. Six of these cases suffered from the active symptoms of posterior urethritis; in two chordee was unusually well marked and prolonged, and in six the running continued more than ten weeks, requiring sounds, instillations, and astringent injections before it ceased. This is too small a number to advance as a positive proof of the failure of what might be called the strict conservative treatment. From a business stand-point, however, it was quite convincing, and since then it has not seemed necessary to corroborate my conclusion as to the inferiority of this treatment to that of internal medication and local applications.

Granting, then, that the course of gonorrhoea is favorably modified by a special treatment, skilfully applied, the question as to the choice of drugs and methods next required investigation. Since salol and the balsams are generally given in combination, it is not possible to determine the exact value of each. For the purpose of throwing light on this point, each drug employed was given to a series of from twenty to forty cases, uncombined with other remedies.

The drugs chosen were salol, oleoresin of cubebs, balsam of copaiba, and oil of sandal-wood.

Without taking up the individual cases in detail, and without attempting to draw conclusions from a summarization of the length of treatment, since in this small number of cases such conclusions are sure to be misleading, I shall simply give the general results obtained by this method of treatment. Nearly all these cases were observed and were reported in detail by my chief of clinic, Dr. Christian.

In the salol series the drug was administered in the capsule form one hour after meals. Each capsule contained ten grains. The beginning dose was three capsules a day. This was increased within a week to six, nine, or even twelve capsules a day. In no instance was the stomach seriously deranged. Two patients suffered from serous diarrhæa; three patients from fever of forty-eight hours' duration, intense pain in the back, and smoky urine.

In all these cases discharge was free, but neither ardor urinæ nor chordee in their more severe forms were noticed. In all, running continued for more than six weeks, the discharge remaining free and distinctly purulent. At the expiration of this time, cure was effected by means of astringent injections, sometimes in combination with the use of a sound.

My general conclusion as to the result of salol treatment was that it modified the severity of the inflammatory symptoms, but did not shorten the attack of gonorrheaa.

The next series of cases was put on oleoresin of cubebs. This was given in 60- to gograin doses, according to the tolerance of the stomach. In a few cases 30 grains was the maximum dose. This medication seemed to exert no effect whatever upon the urethritis, excepting, perhaps, to slightly aggravate the inflammatory symptoms and to increase the ardor urinæ and chordee.

By the oil of sandal-wood, given in from 30-to 60-grain doses, depending upon the toleration of the stomach, the discharge was very materially modified. After the second or third day of treatment it was often cut down to half its former quantity, and the increasing and stationary stages were shortened by several days.

In two or three weeks the discharge was reduced to a single muco-purulent drop, which, in one-quarter of the cases, disappeared in from four to six weeks, leaving the patient permanently well. In the other cases cure was accomplished in the fifth and sixth weeks by astringent injections. No complications were observed in the administration of this remedy, excepting those due to disorder of the stomach. When nausea and eructations occurred, the

dosage was reduced by one-half, and in one or two days was slowly increased again.

The copaiba series gave about the same results.

In all these cases treated by salol and balsams, chordee and ardor urinæ received the customary treatment.

In summarizing the results it seems clear that copaiba and oil of sandal-wood are much more efficient than cubebs and salol, and that they very materially shorten the period of acute inflammation. Salol, in the few cases observed, exerted no markedly beneficial effect, excepting that the cases ran a mild and uncomplicated course. Since this drug is excreted in the form of carbolic acid, it is clear that it must act as a feeble antiseptic to the mucous membrane; hence it is possible that it may prove serviceable in preventing inflammatory complications. This point can only be determined after observation of a very large number Cubebs seemed absolutely without of cases.

On the basis of these observations we have been using in the hospital service a capsule containing five minims of balsam of copaiba, five minims of oil of sandal-wood, and one minim of oil of cinnamon. The combination of the two balsams seemed to act more favorably than either alone, and the addition of the aromatic renders them more acceptable to the stomach. Of these capsules, six to twelve a day are administered one hour after meals.\*

Of one hundred and fifty cases treated by mouth medication alone, one hundred and thirty-four were uncomplicated, twelve developed the typical symptoms of acute posterior urethritis, and four suffered from epididymitis. Considering the fact that these were all ambulant dispensary cases,—a class notorious for their disregard of general hygienic directions,—this absence of complications is fairly satisfactory.

Experience in former years in a very large number of cases had conclusively shown that injections administered early were much more liable to be followed by complications such as violent posterior urethritis, epididymitis, and prostatitis, than when the local treatment was postponed until the disease has reached its subsiding stage. These injections were, however, mainly made up of the astringents, and were often given of a strength now recognized as undesirable in the acute stages of inflammation.

Of one hundred and fifty cases thus treated, eighty-five were complicated by severe posterior urethritis, and in thirteen epididymitis developed.

In starting anew to consider the value of injections, the following methods were tried:

- 1. The abortive treatment by means of strong solutions of nitrate of silver.
- 2. The abortive treatment by copious flushings with dilute antiseptics,—bichloride of mercury, 1 to 20,000; permanganate of potassium, 1 to 10,000; nitrate of silver, 1 to 10,000 to 1 to 15,000.
- 3. Injections of bichloride of mercury, 1 to 20,000; or nitrate of silver, 1 to 6000 to 1 to 10,000, administered from the beginning of the attack.
- 4. Antiseptic and astringent injections administered in the late subsiding stages.

The abortive method by means of strong solutions of nitrate of silver was tried in eight cases. These were selected in accordance with the rules laid down by Diday,—i.e., that the case should be seen before the gonococci had penetrated deeply, the discharge being slight, and made up mainly of mucus and epithelium, and inflammatory phenomena being absent. This, of course, implied that the disease should be seen in the first twenty-four or forty-eight hours of its onset, though in some cases inflammatory phenomena become so marked in twelve hours that attempts to abort the disease are contraindicated.

In making these injections the patient was first required to urinate, stopping the stream repeatedly by pressure upon the meatus, and thus more thoroughly flushing out the fossa navicularis. The urethra was compressed one and a half inches behind the meatus to prevent the injecting fluid from flowing farther back than this, and the fossa navicularis was distended three times with a ten-per-cent. solution of nitrate of silver.

As a result of these injections there was a discharge of pus and blood for twenty-four to forty-eight hours, and the patient suffered from marked ardor urinæ. In seven of the cases the gonorrhæal nature of the inflammation was determined before injection by means of microscopic examination. In the eighth case the discharge was not examined immediately, since, from the history of the case, it seemed clear that the inflammation was undoubtedly gonorrhæal in nature. On the day following the treatment, examination of the pus taken before injection showed that no gonococci were present, the case being undoubtedly one of irritative urethritis.

<sup>\*</sup> The drugs employed in these studies were supplied by Parke, Davis & Co., and were of approved purity and strength.

Of the seven remaining cases, four were well in seven to ten days, and remained so for many weeks afterwards. They were then lost sight of,

Microscopic examination of the post-injection discharge of those cases ending in prompt recovery failed to show gonococci.

In the remaining three cases the disease was very slow in reaching its florid stage. In two, on the day following injection, no gonococci could be found in the discharge. Two days later the discharge was extremely slight, but careful and prolonged examination showed one or two pus-cells containing gonococci. At the end of a week, without further treatment, the discharge was still slight and the gonococci not numerous. At the end of two weeks gonococci were numerous and discharge abundant. gation treatment was then adopted, and the cases quickly convalesced. In the third case no gonococci appeared in the discharge until the fourth day. Irrigations were then practised, resulting in complete cessation of discharge. After these irrigations were discontinued, however, at the end of two weeks the discharge again appeared, and continued to appear at intervals for four months. This patient had three previous attacks of gonorrhœa and was suffering from stricture, which he refused to have dilated.

Out of seven cases of true gonorrhoea the Diday abortive injection was successful in four; in the remaining three it in no wise complicated or aggravated the subsequent development of the disease. Indeed, it seemed to render the backward extension of inflammation much slower than is ordinarily the case.

Antiseptic injections practised from the first were employed in thirty cases. The drugs used were nitrate of silver, I to 6000 to I to 12,000; and bichloride of mercury, 1 to 12,000 to 1 to 20,000. Either the ordinary gonorrhœa syringe or the rubber bulb was employed. Injections were given twice daily,-night and morning. When the nitrate of silver was employed, the urethra was flushed out two or three times at each injection. Only in this way could the full effect of the application be obtained, since, in dilute solutions, the small quantity of urine remaining in the urethral walls is sufficient to neutralize the amount of silver contained in the injection solution. When the bichloride of mercury was employed, the patients were instructed to flush out the urethra from six to ten times at each injection.

As a result of this treatment, the discharge was rapidly cut down, and usually both ardor urinæ and chordee were favorably influenced.

In six cases the injections had to be discontinued temporarily during the second or third week on account of symptoms of acute posterior urethritis. This subsided in three or four days, and the injections were continued, and were later supplemented by the astringents. One case developed epididymitis. The general results obtained from this treatment were that acute posterior urethritis developed more frequently than when internal treatment alone was employed during the increasing stage of the disease, but that the anterior discharge was more markedly influenced than by balsams alone.

Copious irrigations were given by means of a rubber bag holding one quart, the tube of which was attached to a soft catheter of No. 10 This catheter was lubricated with carbolized glycerin and passed to the compressor urethræ muscle, the bag was elevated four feet above the level of the bladder, and its contents were allowed to flow through the catheter, thus flushing out the anterior urethra. The lotions employed were as hot as could be borne with comfort by the patient. The nitrate of silver was during the early stages usually too irritating. The solution of choice was bichloride of mercury, 1 to 20,000, with enough sodium chloride added to make a solution about equal in density to normal blood serum (about .7 per cent.). In some cases this also seemed to irritate. Permanganate was then used, and usually excited no inflammatory reaction. The irrigations were employed as soon as the patient came under observation. In the increasing stage they were given night and morning, if possible. Usually they could only be taken The passage of the catheter was once a day. rendered painless by previous injection with a four-per-cent. solution of cocaine.

Twenty cases of acute urethritis were thus treated. As a result, the gonorrhoea, almost without exception, ran an unusually mild course. Often in three to five days discharge would cease entirely, and even in the clap shreds found in the urine but few gonococci could be detected. In three cases cessation of the treatment at the end of two weeks showed that the patient was permanently cured. Usually there would be some moisture at the meatus in the morning. Examination of the urine would show the presence of clap shreds, but gonococci could not be found. In no instance was ardor urinæ or chordee particularly distressing. In five cases mild symptoms of posterior urethritis developed. In the sixth case the pain and tenesmus incident to involvement of this portion of the urethra became intense,

persisted for five days, was not beneficially modified by almost toxic doses of anodynes, and only yielded to instillations of two-percent. nitrate of silver. In the majority of cases the morning moisture and clap shreds persisted for from four to six weeks, and only disappeared after the employment of astringent injections by means of the ordinary piston syringe, or of instillations into the prostatic urethra. It was noted in a number of cases that even though the outflow of the injected liquid from the urethra was comparatively free, nevertheless the compressor urethræ muscle vielded to the pressure of the lotion and allowed some of this to pass into the bladder. This can scarcely be considered a contraindication to the employment of this method, since it may be accepted that gonorrhœa always invades the posterior urethra, but usually in a form so light and superficial that it is not noticed. This being the case, mild antiseptic lotions applied to this part of the urethra are particularly desirable. These copious flushings were often extremely painful, the distress lasting for one or two hours after they were completed.

The irrigation treatment in the few cases observed gave better results than any other method. Though it did not always greatly abridge the course of gonorrhœa, it materially modified the violence of the inflammatory phenomena. In cases where there was no stricture or other lesion from preceding gonorrhœa it sometimes accomplished a cure within two or three weeks.

The employment of astringent injections during the early subsiding stage of gonorrhœa showed that acute symptoms of posterior urethritis were even more liable to occur than when mild antiseptic injections were employed from the first. This would naturally be expected, since during the end of the second week the inflammation has reached its greatest intensity at the bulbo-membranous junction, and has in nearly all cases already invaded the membranous and prostatic urethra. Any strong irritant applied to the ananterior urethra would, by markedly increasing congestion of the whole of this canal, acutely exacerbate a mild posterior urethritis. late subsiding stage, however, six to eight weeks, injection treatment, properly applied, produced only beneficial effects.

The injections employed were:

- Silver nitrate, gr. ss to i; Distilled Water, f\( \frac{3}{3} \text{vi.} \)
- R. Colorless fluid extract of hydrastis, fziv; Subnitrate of bismuth, ziv; Rose-water, fzvi.

- R Sulpho-carbolate of zinc, grs. xv to xxx; Distilled water, f xvi.
- R. Powdered alum, 3i; Water, f3vi.
- R Carbolic acid, grs. vi to xii; Zinc sulphate, grs. xv to xxx; Distilled water, f3vi.

Hydrastis and zinc seemed particularly serviceable towards the end of the subsiding stage. The bismuth and hydrastis injection seemed the best with which to begin injection treatment.

In addition to the methods above detailed, we have tried on four dispensary cases injection of ergot, led thereto by many and enthusiastic reports as to its almost specific action in inhibiting the growth of the gonococci. We employed a five- to twenty-five-per-cent. solution. The results were absolutely negative.

Ichthyol was also used as an injection in one- to ten-per-cent solution, but no marked benefit was derived from its application. It would be particularly in acute inflammatory cases that this drug should be most serviceable, since its special value lies in its power to inhibit germ growth and the quality it has of causing absorption of subepithelial infiltration.

The method of Cotes and Slater was tried in seven cases. This method was carried out as follows: After the patient urinated, the urethroscope was passed to just beyond the posterior margin of the acute inflammation. urethra was cleansed and dried by the application of cotton, and then was medicated by means of a cotton applicator soaked in a tenper-cent. solution of nitrate of silver brought in contact with the entire length of the urethra. Following this, alkaline mixtures were given internally, and a mild antiseptic injection was Our results by no means correused daily. spond to those reported by Cotes and Slater, who were successful in forty cases, curing the disease on an average in about twelve days. The applications always caused severe ardor urinæ, and in two cases seemed to be the exciting cause of acute posterior urethritis. The disease was not aborted in any case. The best results were those which we could naturally expect from the use of the mild antiseptic injections applied after the cauterant treatment. the cases ran into gleet.

Concerning the conclusions which this series of observations seemed to justify, the following is a résumé:

- n. The abortive treatment of gonorrhoea by means of ten-per-cent. nitrate of silver injections applied to the navicular fossa is advisable when the disease is seen in its earliest stage,—that is, when inflammatory phenomena are absent, and when the symptoms consist in the slight whitish discharge and tickling or moderate burning on urination, and when microscopic examination of the discharge shows that it is made up mainly of mucus and epithelium containing little pus. This abortive treatment is successful in an uncertain percentage of cases. When it fails, it does not materially complicate the subsequent course of gonorrhoea.
- 2. When gonorrhoea is first seen in its florid stage, in addition to ordering rest, light diet, regular evacuation of the bowels, free drinking of plain waters, hot baths on retiring, alkaline diuretics, and the treatment appropriate to ardor urinæ and chordee, balsams should be given in full dose and mild antiseptic irrigations or injections should be practised at once. The most efficient balsams are sandal-wood and copaiba. These should not be pushed to the point of disordering the stomach.
- 3. Irrigation of the urethra by means of hot antiseptic lotions gives better results than any other treatment. These should be continued either once or twice a day until gonococci disappear from the discharge or from the clap shreds found in the urine. They should then be replaced by astringent injections.
- 4. When irrigations cannot be employed, even during the florid stage injections are indicated; these should be of bichloride of mercury, 1 to 20,000, or nitrate of silver, 1 to 10,000. These injections should be gradually strengthened as urethral tolerance is established.
- 5. Injections of nitrate of silver, 1 to 3000, or bichloride of mercury, 1 to 1000, or injection Brou, or any of the formulæ customarily used in practice in the increasing or florid stage of gonorrhæa, distinctly predispose to the development of hyperacute posterior urethritis, epididymitis, and other complications of gonorrhæa, and may aggravate and prolong urethral inflammation. Strong astringent injections employed in the early period of the subsiding stage are equally dangerous.
- 6. Treatment by internal medication alone is followed by a small percentage of epididymitis and posterior urethritis, but by slow cure. The most efficient treatment consists in the combination of the balsams with local antiseptic washings.

PILOCARPINE: ITS PHYSIOLOGICAL AC-TION AND THERAPEUTIC USES. WITH EXHIBITION OF SPECIMENS SHOWING CHANGE IN THE COLOR OF THE HAIR.

READ BEFORE THE NEW YORK ACADEMY OF MEDICINE BY INVITATION, APRIL 5, 1893.

By D. W. Prentiss, M.D., Washington, D. C.

THE drug which I have selected to bring to your attention this evening is the most important addition to the Pharmacopæia of 1880, and is one that has interested me for several years past.

In one particular its action is unique, and is confined, so far as I know, to my own experience. I refer to the action of pilocarpine in changing the color of the hair.

This action of the drug alone, however, is too limited for general interest, and the title of the paper is made to read "Pilocarpine: Its Physiological Action and Therapeutic Uses. With Exhibition of Specimens showing Change in the Color of the Hair."

I am warned that this essay must not be too long, and therefore shall try to condense it as much as possible.

Division of the Subject.

- 1. Brief Statement of Natural History.
- 2. Physiological Action.
  - 1. As a sudorific.
  - As a stimulant to accommodation of eye and contraction of pupil, and as stimulant to the hearing apparatus.
  - As a stimulant to the growth of the hair,—action in changing color of hair.
- 3. Therapeutic Uses.
  - Most important as a sweat producer.
  - 2. In diseases of the eye and ear.
  - 3. Use in promoting growth of the hair.
- 1. Natural History. (Pharmacographia), Pilocarpus pennatifolius, Lemaire.

A shrub, growing to height of ten feet; native of the eastern provinces of Brazil. (For plate, see Bentley and Trimen, Part XXXII., 1878.)

There are other species included under the general name of jaborandi, but the *pennatifolius* is the most active and the one recognized by the U. S. Pharmacopœia.

The principal constituents of the leaves are:\*

<sup>\*</sup>Through the kindness of Merck & Co., of New York, specimens of the pure alkaloids and their salts were exhibited.

- 1. Pilocarpine, the active principle.
- 2. Jaborine.
- 3. An essential oil, which shows in the pellucid spots of the leaves and belongs to the terebene series.

this contained offensive pus. At one time—from December 16 to 23, seven days—not a drop was passed, although the catheter was used twice daily.

Again, from January 22 to February 2-



Pilocarpine is an amorphous soft ambercolored mass, discovered in 1875 by Hardy, and makes crystallizable salts with acids. Leaves contain one-half of one per cent.

Jaborine has the same chemical constituents, but differently arranged, and gives just the opposite physiological action to pilocarpine. The action of jaborine is identical with atropine.

Hence the importance that the pilocarpine be pure and free from admixture. This admixture probably explains the different results obtained by different investigators as to physiological action.

The essential oil is inert.

- 2. Physiological Action.
- 1. As a sudorific.

Perhaps the shortest and least tiresome method of describing its physiological action will be to mention an actual case,\* and as this is the case in which the change in the color of the hair occurred, it will be the more appropriate. It also illustrates the use of the drug in uraemia.

The patient, female, aged twenty-five years, was suffering from pyelo-nephritis with prolonged anuria. For ten weeks the amount of urine did not average two ounces daily, and

eleven days—not a drop was excreted, the catheter still being introduced twice daily; and from January 22 to February 12—twenty-one days—a total of but little over two ounces in all were passed. Twenty-one days of almost total anuria.

Previous to December 16 the hot bath and hot packing were several times resorted to to produce diaphoresis, without effect.

Extreme uræmic symptoms had developed,—
no itching, but incessant vomiting, nervous
restlessness, twitchings of the muscles, flushed
face, severe headache, confusion of vision, and
delirium.

An attempt was made to give infusion of jaborandi by the stomach, but it was rejected, as was also the solid extract in gelatin-coated pills.

Finally, December 16, hydrochlorate of pilocarpine, 1 centigramme, was administered hypodermically, the patient being wrapped in a warm blanket, with bottles of hot water around her.

On two or three occasions later, when the blanket and hot bottles were omitted, there was less sweating.

From December 16 to February 22 twentytwo sweats were administered, requiring thirtyfive or forty centigrammes of pilocarpine. As the patient became accustomed to the medi-

<sup>\*</sup> Philadelphia Medical Times, July 2, 1881.

cine, it was found necessary to increase the dose to two centigrammes.

An analysis of the phenomena following the use of the drug in one of these "sweats," it seems to me, will be more graphic than a general description of the physiological action. If it is tiresome, I crave pardon. It shall, at least, be brief.

A Pilocarpine Sweat, I Centigramme Hypodermically.—The action of the drug was carefully noted. Immediately, almost before the needle was withdrawn, the face and neck would flush bright red, and dimness of vision be noticed; then palpitation. In three minutes, slight nausea; eyes, nose, and mouth beginning to water and skin showing moisture. In seven minutes, free vomiting, profuse sweating, and salivation.

# ANALYSIS OF SEPARATE SYMPTOMS.

Perspiration.—First noticed on forehead and neck, then the skin of the whole body, which had been previously dry and harsh, became moist. When sweating was fully established, the water ran in little streams over all parts of the body. In the face it was with difficulty kept out of the eyes. In five minutes the hair would be saturated, and though wiped as dry as possible, it would be again soaked in a few minutes. In odor the perspiration was offensive, and on several occasions had a distinctly urinous smell.

Salivary Glands.—In the beginning of the ordeal water flowed freely from the eyes and nose, as well as from the mouth, but when salivation was fully established, the eyes and nose ceased to discharge. The saliva was viscid and tenacious, so that to clear the mouth it was necessary to use a handkerchief. Its flow was so profuse that, after thus clearing the mouth, she would not have time to get a drink to quench thirst before the mouth would again be filled. So, also, talking connectedly was prevented by the same cause. The water drank during a sweat at no time exceeded a gobletful.

Vomiting.—The vomiting continued throughout, almost without intermission, and was the most distressing symptom of the ordeal. After a spell of vomiting, the patient would lay back on the pillow exhausted, hoping for a rest, but it would immediately return. The odor of the ejecta during February was very offensive, like decayed vegetable matter.

The amount discharged in this way, which included saliva, was never less than two quarts, and often a gallon. The patient stated that she did not swallow the saliva, and insisted

that the material vomited came from the stomach. This would indicate that pilocarpine also causes a fluid discharge from the gastric mucous membrane. Nausea and vomiting ceased as soon as the effect of the medicine passed off. Food was then taken and retained, although previously the stomach rejected everything.

Bowels.—Just as soon as perspiration was fully established the bowels moved,—always a large action, and sometimes more than once. This action on the bowels is twofold: (1) from an increased amount of liquid in the intestines and (2) from increase of peristaltic action. There were seldom more than two or three movements.

Action on Heart.—Pulse became rapid in a few minutes, and when the action of the drug was fully established, a thumping palpitation added to the distress occasioned by the vomiting. This "thumping" could be heard at a distance of six feet, and continued with decreasing violence until the close of the paroxysm. The pulse ranged from 120 to 136, and was weak and compressible.

Eyes.—Pupils contracted to a small point. Sight became impaired at the first rush of blood to the face, and the dimness continued until it was impossible to distinguish objects beyond the foot of the bed.

As the effects wore off the exhaustion was extreme; pulse 130 and feeble. But there was a grateful sense of relief, and a disposition to sleep even before the sweating ceased. The head was no longer dizzy, pain less, stomach free from nausea, and tongue free from coating. A quiet sleep followed, lasting several hours, from which the patient awakened refreshed and hungry.

Amount of Fluid discharged during a Sweat.

—Of course, this could only be estimated. The fluids from acts of vomiting were caught in a basin and emptied three or four times, and each time contained not less than a quart. The blanket in which the patient was wrapped was saturated, as was also a folded sheet under the blanket. The pillow was saturated and the bolster beneath wet.

An experiment was made of saturating the blanket to as near as possible the same extent, and five pints of water were required.

Putting these together, then, we have the following calculation:

	Pints.	
By vomiting and saliva	7	
By saturated blanket		
By sheet, pillow, and body-clothing	2	
	_	

This seems almost incredible, but I believe the amount is strictly within the truth. The patient and her attendants thought the amount understated rather than exaggerated.

It is unnecessary to record further the details of this case, as I have used it in illustration of the action of pilocarpine.

Suffice it to say, the patient recovered, and is alive to-day.

It only remains in this case to record the remarkable change in the color of the hair which took place under the influence of the pilocarpine.

All of the patient's life (she was twenty-five years old) up to the beginning of the treatment her hair was light blonde with a yellow tinge. Twelve days after beginning the injections it was noticed to be darker, and from that time the change of color was rapid until, two months later, it was black.\*

The hair also became coarser and thicker in its growth. The eyebrows and eyelashes, before almost invisible, came out beautifully pencilled. The hair on other portions of the body participated in the change.

MODUS OPERANDI OF PILOCARPINE.

Upon sweat and salivary glands:

- 1. Stimulates nerve-centres of these glands.
- 2. Stimulates efferent nerves to the glands.
- 3. Stimulates glandular structure itself to increase the secretion.

In brief, pilocarpine is a specific diaphoretic and sialagogue by its elective action on these glands.

It increases also the secretions from the mucous membranes of the

Bronchial tubes,

Stomach,

Intestines and kidneys,

But does not increase the flow of bile.

As to the discharge from the bronchi, stomach, and intestines, it is difficult to say how much of the liquid is swallowed saliva.

There is not time in this paper to go into details of the experiments made to show the manner of the action of this drug, nor is it necessary, since they are fully discussed in the works of H. C. Wood, Lauder Brunton, Ringer, and others.

Brunton speaks of the enormous secretion from the sweat-glands, and states that it amounts to from one to two pounds, and, together with the salivary secretion, often as much as eight pounds. In the case which I have mentioned above I have estimated the amount, including the vomiting, at fourteen pounds.

I expect to have this statement challenged, and admit that it appears incredible that a girl weighing ninety or one hundred pounds could thus lose one-fifth of her weight in six hours without serious consequences. But the estimate was honestly made, and I stand by it.

Landois and Sterling give the amount of blood in the body at one-thirteenth of the body-weight, and the total proportion of water to the weight of the body at 58.5 per cent. It is not to be supposed that all the water excreted during a pilocarpine sweat comes from the blood at one time. As it is taken out of the blood it is replaced from other tissues by reabsorption.

One important point in the diaphoretic action of pilocarpine is the fact that the amount of urea excreted by the skin is greatly increased. This amount is stated to be not less than one gramme (fifteen grains) for each "sweat," which is five times more than in normal perspiration (H. C. Wood).

The importance of this fact is recognized in the usefulness of pilocarpine in uræmia, and is markedly illustrated in the above case. After three or four days of anuria, uræmic symptoms became intense, and were relieved by pilocarpine.

The discharge from the bronchial mucous membrane is largely increased. This also has an important clinical significance in two ways:

- 1. It is this effect that makes it useful in the treatment of diphtheria, in which disease it detaches and softens the membranes by the liquid exudation beneath them, so that they can be expelled. This statement is not theoretical, but is a clinical fact, and were it not for the depressing action of the drug on the heart, it would undoubtedly be of great value in that disease.
- 2. The second clinical significance of this action on the bronchial mucous membrane is that it points out a contraindication, as in cases where bronchitis or cedema of the lungs exists there is danger of drowning the patient in his own secretions.

But whatever may be the physiological action, as shown by experiments on animals, the clinical effect on the heart constitutes the main contraindication and principal danger of its use in disease. Many cases have occurred where fatal results from cardiac failure have followed its use in disease.

One notable case occurred in Dublin, Ireland, some years since, where a physician ad-

<sup>\*</sup> Specimens were exhibited showing changes as above described.

ministered pilocarpine in malignant scarlatina. The patient promptly died, and the doctor was called upon to defend an action at law for having killed the child.

A similar case came under my own observation, without, however, the unpleasant sequel.

So, also, in dropsy with weak heart, especially dropsy *due* to heart-disease, care must be taken, in the use of the remedy, to administer stimulants freely at the same time.

Action on respiration follows that on the heart, dyspnœa accompanying the intense palpitation, and later there may be embarrassment from accumulation of mucus in the bronchial tubes. Temperature falls 0.9° during sweating stage (Brunton).

Another action of pilocarpine, which is mentioned only as a caution, is its effect in producing abortion. This is a frequent result where given in full dose during pregnancy. In like manner, also, it may produce premature menstruation or precipitate menorrhagia.

Bartholow mentions four cases in which labor was induced by three hypodermic injections of two centigrammes each; and out of nine cases where it was used for this purpose, it was successful in six.

GENERAL DISEASES IN WHICH PILOCARPINE IS USEFUL.

Of renal origin.
Of cardiac origin.

I. Dropsies. Local dropsies,—e.g., hydro-

thorax. Hydropericardium and ascites.

2. Uramia. Anuria from various causes. In Bright's disease.

Puerperal convulsions.

Especially such as are attended by dry, itching

3. Diseases of the skin.

Prurigo, pruritus senilis. Chronic urticaria, chronic eczema.

- 4. Diphtheria.
- 5. Diabetes insipidus.
- 6. Galactagogue.
- 7. To stimulate the growth of the hair.
- 8. As an antidote to serpent venom.
- 1. In dropsies its value is evident from the amount of liquid excreted from the system.

In renal dropsy and in local dropsy, such as hydrothorax, its value is particularly marked.

In renal dropsy it relieves not only by taking water out of the system, thus causing its absorption, but also by the large excretion of urea it causes, thus relieving the uræmia, as in the case before quoted. Another effect, espe-

cially in acute nephritis, is to relieve congestion of the kidneys and restore them to action.

It is desirable in administering the drug to wrap the patient in blankets and surround him with hot bottles, to increase the diaphoresis, and if he is exhausted, give a stimulant.

In hydrothorax, hydropericardium, and ascites the same method is to be employed. In the former the results have been especially satisfactory. In dropsies due to heart-disease, special care must be taken to guard against the depressing action.

- 2. Uramia.—Enough has already been said of its use in uramia due to anuria, in the case quoted, to indicate its usefulness. In puerperal convulsions it has proved of great value.
- 3. In diseases of the skin, particularly those attended by itching and in which the skin is dry.

In one of the cases where it caused change of the color of the hair it was given successfully for the itching attending chronic Bright's disease, in dose of 20 to 30 drops of the fluid extract several times daily, for a year and a half.

It caused moisture of the skin and relieved the itching.

I have seen it give prompt relief in a case of obstinate urticaria after the usual remedies had failed. In this latter case there was a gouty rheumatic affection of the finger-joints, which disappeared while under its use.

In another case of rheumatic gout of the fingers it was given successfully. So, also, in subacute and chronic rheumatism of other joints that resist ordinary treatment, pilocarpine is worth a trial on the basis of aiding the excretion of effete material from the system.

In these cases it is given by the mouth, either in form of the fluid extract or of the alkaloid, just sufficient to cause moisture of the skin and slightly increased flow of saliva, and must be continued sufficiently long to get decided excretory action.

4. In Diphtheria.—Dr. Guttman, of Cronstadt, was the first to insist on the value of pilocarpine in this disease, and he claimed favorable results in a large number of cases. His observation was, not that it exerted any specific action in the disease, but that it loosened and softened the false membrane by its action on the mucous membrane beneath, so that the former was easily expelled.

Following his report, Lax reported ten cases treated by pilocarpine alone, all of which recovered.

Later, Dr. E. C. Wendt (Med. Record, April 9, 1881) reported three cases which recovered

under pilocarpine after other remedies had failed. On the other hand, Neumeister published twenty-eight cases thus treated, with unfavorable results. Five cases were adults, twenty-three children.

The adults appeared to be influenced favorably, but with the children, thirteen out of the twenty-three died, and in eight bad effects of the drug were observed.

Neumeister's conclusion was that pilocarpine is a dangerous drug with children, and that its value in diphtheria is not sufficient to justify its use.

In a disease so fatal as diphtheria, especially the laryngeal form, any remedy which promises to avert the usual termination is welcomed with avidity.

The following case illustrates the most favorable action of the remedy in this disease. It occurred in my practice shortly after Guttman published his cases.

I give only a synopsis of the case. Charles S., aged fourteen months, strong, healthy child of German parentage. Had been ailing for several days previous to July 9, 1881, with hoarse cough. On this date I saw him, when voice was lost, and he was restless.

July 10.—Breathing loudly stridulous; voice entirely suppressed; entire fauces were covered with ashy-white membrane.

July 11, A.M.—Worse; dyspnœa and restlessness increased. Pilocarpine, 2 milligrammes, ordered to be given every hour, milk-punch ad lib.

July 11, P.M.—No worse.

July 12, A.M.—No worse. Turpeth mineral emetic given during night; dose of pilocarpine doubled.

July 12, P.M.—Better; slept most of the day; stridulous breathing less marked; more cough and cough looser; sweating and salivation very free; dose of pilocarpine reduced to original amount.

July 13, A.M.—Still better; passed comfortable night, sleeping; stridulous breathing gone; false membrane has disappeared from the fauces.

July 13, P.M. — Still improving; cough troublesome, but loose; aphonia still present.

July 15.—Still improving; slight return of voice; some appetite.

July 18.—Diphtheria well; slight diarrhœa. When I first saw this case I considered it hopeless in the light of previous experience. It illustrates the most favorable action of pilocarpine in diphtheria.

I have tried it in many cases since, but without so favorable a result. The form of diphtheria in which pilocarpine is most useful is that known as membranous croup, in which the danger is from the local obstruction to respiration rather than from septic infection and exhaustion. In these cases it favors the separation of the membrane and consequent expulsion.

5. Diabetes Insipidus.—In this disease it acts as a revulsive by attracting away from the kidneys the excessive secretion of water and directing it to the skin and salivary glands; and the habit once broken, it may not return.

One case under my observation, a German blacksmith, aged about fifty years, had a sunstroke in July, which was followed in October by diabetes insipidus.

The amount of urine passed was very great, a large bucket being filled during the night, and as much more passed during the day,—about four gallons in twenty-four hours.

The amount of water drunk was in proportion. The skin was dry and scaly, though in health he had always sweated freely.

After trying other remedies without relief, he was ordered 4 grammes of the powdered leaves in infusion, the powder to be stirred up and drunk with the infusion at bedtime; at the same time the man was wrapped in hot blankets.

The following morning I found him much exhausted, unable to rise from weakness. He had sweated and salivated all night. The blankets were soaked, the mattress soaked, and there was a puddle of water on the floor under the bed. But it was the end of the polyuria; the latter never returned.

This case occurred over twenty years ago. There has been no return of the disease, and the man is still in good health for his age.

6. As a Galactagogue.—Its action upon the mammary gland is analogous to its action upon the salivary and sweat glands, but in a much less degree.

Many cases have been reported of its successful use when there was insufficient secretion of milk.

For this purpose it is administered internally in doses just sufficient to produce its physiological action without excessive sweating and salivation.

7. To stimulate the Growth of the Hair.—
This it does by increasing its nutrition through the hair bulb. There are two methods of administration for this purpose,—one, the slow method, by small doses given by the stomach through a long period, in just sufficient amount to cause slight sweating and salivation; the other, the rapid method by hypodermic injections of one centigramme two or three times

a week. (See reports by Schmitz, Scholler, Simon, and Pick, farther on in this paper, p. 662.)

8. The Action of Pilocarpus as an Antidote to Serpent Venom.—For the knowledge of this property of the drug, we are indebted to Dr. H. C. Yarrow, of Washington, D. C., and late herpetologist to the United States National Museum.

The following letter from Dr. Yarrow explains itself:

"My DEAR DR. PRENTISS,—In answer to your inquiry as to the influence of extract of jaborandi as an antidote to serpent venom, I will state that my experiments at the United States National Museum at Washington, D. C., upon the venom of the rattlesnake, led me to believe that jaborandi has decided antidotal value, and its active principle, pilocarpine, doubtless would be even more efficacious. These experiments were carefully made upon dogs, rabbits, and chickens, and it was conclusively shown that jaborandi, administered hypodermically after the application of the venom, protected against an otherwise lethal dose. So, also, did the administration of the drug internally immediately after the poisoning. details of these experiments were published in Forest and Stream for the year 1888.

"Very sincerely yours,
"H. C. YARROW, M.D."

# ACTION ON THE EYE.

Brunton divides myotics (pupil contractors) into two classes:

- 1. Those which act by stimulating the endings of the oculo-motor nerve, which supply the circular fibres of the iris,—viz., pilocarpine, muscarine, nicotine.
- 2. Those which act directly on the circular fibres themselves,—viz., eserine.

Pilocarpine contracts pupil and causes spasm of accommodation by stimulating the oculomotor nerve-endings of circular fibres of the iris, and those to the ciliary muscle.

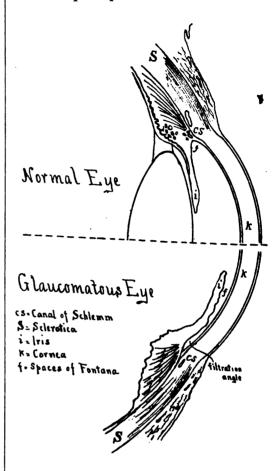
Action upon accommodation begins after, and passes away before, that upon the irist. The effect on the eye, when applied locally, lasts about one hour and a half.

Atropine, on the contrary, dilates the pupil and paralyzes the accommodation by paralyzing nerve-endings of the oculo-motor, and stimulating the radiating fibres of the iris.

The importance of these physiological actions is in their relation to intraocular pressure.

I hope I may be pardoned a reference to the therapeutics of certain eye-diseases in this

presence, where so many are already familiar with the subject in their daily work. But all of us are not specialists, and the reference is in the line of *pilocarpine*.



Intraocular pressure is increased by the increase of fluid in the anterior chamber. As,—

- 1. An increase in the amount secreted by the ciliary processes (aquus capsulitis).
- 2. Interference with its exit through the canal of Schlemm into the perichoroidal spaces (glaucoma).
  - 3. Hyperæmia of the iris.

Intraocular pressure is diminished by opposite causes. Pilocarpine and eserine diminish intraocular pressure by drawing backward and flattening the iris, so as to allow the fluid of the anterior chamber to escape through the spaces of Fontana and the canal of Schlemm into the perichoroidal spaces.

An examination of the drawing, which shows both the normal and the glaucomatous eye, indicates the *modus operandi* of myotics in diminishing intraocular pressure.

The diseases of the eye in which pilocarpine and other myotics are useful I will merely enumerate:

DISEASES OF EYE AND EAR IN WHICH PILO-CARPINE IS USEFUL.

Glaucoma.

Hemorrhage into vitreous and retina.

Detachment of retina.

Floating bodies in vitreous.

Vitreous opacities.

Commencing atrophy of optic nerve.

Diseases of. Eye.

White atrophy (a specific, according to Gillet de Grandmont).

Paralysis of accommodation. Amblyopia from tobacco- or alcohol-poisoning (par excellence).

Chronic rheumatic affections of eveball.

Photophobia.

To break up adhesions of iris to lens or cornea.

Ear.

Diseases of ( Labyrinthine deafness. Aural vertigo.

I have mentioned glaucoma first because it is a matter of so much importance to the general practitioner that he should be able to recognize it, and at least do no harm if a case comes to him.

The majority of cases of glaucoma come first to the general practitioner, and the two symptoms-hardness of the eyeball and rainbow colors around a light-should put him on his guard. If these symptoms are present, with dimness of vision and pain, better send the case to a specialist.

But, of all things, do not put atropine in the eye. This last, unfortunately, is too often done, the case being mistaken for iritis, the result of which it is unnecessary to state to this audience.

In all of these diseases the pilocarpine is useful, from one or all of its properties, in (1) reducing intraocular pressure, or (2) contracting the pupils, or (3) stimulating the muscle of accommodation.

In commencing atrophy of the optic nerve, according to Gillet de Grandmont, it is almost a specific (Brunton's "Therapeutics").

In amblyopia from tobacco and alcohol also, it is credited with being a most valuable remedy.

When used only to contract the pupil and stimulate accommodation, it may be dropped into the eye in solution.

But when used in the graver internal diseases of the eye, it must be pushed to its full

physiological action, and had best be administered hypodermically in dose of 1 centigramme, this being given once daily, or once in two or three days, according to the effect.

In labyrinthine deafness and aural vertigo, success has been claimed in several cases. It is administered as above. He does not explain the manner in which it acts.

ANTAGONISM BETWEEN PILOCARPINE AND ATROPINE.

This is so well known that it needs but to be mentioned.

Pilocarpine causes sweating and salivation and increases secretion of mucous membranes; contracts pupil and stimulates accommodation: diminishes intraocular pressure.

Atropine and jaborine are the opposite in every particular.

The two are, therefore, physiological antidotes of each other.

A pilocarpine sweat can be stopped by a hypodermic injection of atropine. In experiments on frogs, where the action of the heart has been stopped by pilocarpine, it can be restored by atropine.

So, also, poisoning by belladonna, stramonium, or hyoscyamus can be, and has been, successfully treated by pilocarpine. Such cases have been mentioned by several writers.

A case is reported in the Australia Medical Gazette (February 15, 1892, by Dr. Cortis) of a child, eighteen months old, who took four grains of sulphate of atropine and six grains of cocaine. Pilocarpine, one-seventh of a grain, was injected, and shortly after repeated. There was immediate improvement and prompt recovery.

The amount required to antagonize a given dose of atropine is stated to be four times as much of pilocarpine.

In the three following respects pilocarpine and atropine agree in action:

- 1. In producing frontal pain.
- 2. In producing pain in bladder.
- 3. In affecting children less than adults in proportion.

But these have no importance from a therapeutic stand-point.

We consider next the change in the color of

One case I have above referred to.

In another, a case of diphtheria in a very light-haired child, specimens taken before and after treatment show a decided change for the darker; but after a time the color appeared to fade. In this case the drug was only administered a few days.

A third case was reported in a paper read by myself before the American Medical Association, June, 1889, which I draw upon largely for the following facts:

Mrs. L., aged seventy-two years, suffering from Bright's disease, contracted kidney. Hair and eyebrows had been snow-white for twenty years. Suffered greatly from itching of the skin, due to the uræmia of the kidney-disease. Skin harsh and dry. For this symptom fluid extract of jaborandi was prescribed, with the effect of relieving the itching. It was taken in doses of 20 or 30 drops, several times a day, from October, 1886, to February, 1888.

During the fall of 1887 it was noticed by the nurse that the eyebrows were growing darker, and that the hair of the head was darker in patches. These patches and the eyebrows continued to become darker, until, at the time of her death, they were quite black, the black tufts on the head presenting a very curious appearance among the silver-white hair surrounding them. A new growth of black hair also appeared on the scalp under the old hair.

These are the only cases thus far recorded in which pilocarpine has been supposed to change the color of the hair.

In 1879, Dr. G. Schmitz (Berliner Klinische Wochenschrift, No. 4, 1879; Medical Bulletin, Philadelphia, 1882), of Cologne, reported two cases in which pilocarpine stimulated the growth of the hair in alopecia. One patient, aged sixty, completely bald. Pilocarpine subcutaneously for disease of the eye. After three injections, within a fortnight, the head became covered with a thick down, which grew rapidly, so that in four months no trace of the baldness was left. No mention is made of the color. In the second case, the patient, aged thirtyfour, had a bald patch on top of the head the size of a playing-card. Total restoration of the hair after two injections, in a short time.

Scholler (Klebs's Archiv, 1879) tells of similar results in animals in which alopecia had been produced by injections of bacteria.

Oscar Simon (Berliner Klinische Wochenschrift, 1879) relates the case of a woman, aged thirty. General alopecia,—head, eyebrows, eyelashes, axillæ, and pudenda. In a few weeks, after twenty injections of pilocarpine, the lanugo of the whole body was restored. In other cases so treated there was no effect whatever.

Professor Pick (Vierteljahrschrift für Dermat. und Syphil., 1880) relates the case of a man who was afflicted with alopecia areolata. Two

weeks after pilocarpine injections followed a fine colorless lanugo, and in twelve weeks restoration of the hair.

Ten cases of alopecia pityrodes; favorable results from same treatment. Color of hair not mentioned.

Landesberg (*Medical Bulletin*, Philadelphia, 1882), of Philadelphia, says that in more than one hundred cases of eye-disease treated by pilocarpine he observed no effect whatever upon the growth of the hair. Dose and mode of administration not mentioned.

In 1882, Julius Pohlman, of Buffalo, experimented on white rabbits by hypodermic injections of pilocarpine. The dose used was large,—I grain three times a day. No change in color was noted in pure white rabbits. In parti-colored animals,—white and brown,—in one a brown spot on back of head deepened and spread to a remarkable degree down the back and sides of the animal to the legs. In other individuals no change was noticed. Postmortems on these animals showed enlarged spleen and altered suprarenal capsules.

The question of change of color of the hair is an interesting one, both from a physiological point of view and from the practical one of pathology.

The physiological aspect embraces the question of how a change of color takes place,—whether in existing hairs, or produced by shedding of the hair and a new growth taking its place of a different color.

It has been doubted by good authority—Hebra and Kaposi—if the hair, after being once developed, can change except by a very gradual process. This doubt is based upon the theory that the hair has no vascular or nerveconnection with the general system, and must, therefore, be independent of nervous or systemic influence. This position is, however, not tenable. The clinical evidence is positive that the hair does change color under systemic influences, sometimes gradually and sometimes suddenly.

We hear frequently of the hair turning white in a night from violent emotions, as fright, great grief, or great joy, and it has come to be a method of expressing extreme emotion to say, "It was enough to turn one's hair white."

I say it is not an uncommon thing to see mention of such cases in popular literature, but well-authenticated cases are not so often. found. It is recorded in history that the hair of Marie Antoinette and Mary Queen of Scots became white suddenly from the horrors to which they were subjected.

A short time since, in conversation with an

eminent microscopist and pathologist,\* I asked how he would explain, from the basis of minute anatomy, the sudden change in color of the hair. He replied that he did not explain it; that he did not believe it happened; that the reported cases were not authenticated. He further said that, from the structure of the hair and its relation to the skin, he considered it impossible.

Duhring (third edition) is authority for the statement that Hebra and Kaposi discredit sudden canities. There is, nevertheless, no doubt of the fact that such change does sometimes occur, and to set the matter definitely at rest, I looked up the subject in the library of the Surgeon-General's office. The following are some of the references found:

Dr. Wm. P. Dewees ("Phila. Med. Mus.," 1807, vol. iii. p. 219), of Philadelphia, reports a case of puerperal convulsions under his care. From 10 A.M. to 4 P.M. fifty ounces of blood were taken. Between the times of Dr. Dewees's visits—not more than an hour—the hair anterior to the coronal suture turned white. The next day it was less light, and in four or five days was nearly its natural color.

He also reports two cases of sudden blanching from fright.

Dr. Robert Fowler (London Lancet, 1853, p. 556) reports the case of a girl sixteen years of age, apparently in good health, hair black; found one morning, in combing her hair, that a strip the whole length of the back hair was white, starting from a surface two inches square around the occipital protuberance. Two weeks later she had patches of ephelis over the whole body.

In the Canada Journal of Medical Science, 1882, p. 113, is reported a case of sudden canities due to business worry. Microscope showed a great many air-vesicles both in the medullary substance and between the medullary and cortical substances.

Dr. Graves says most authors are of the opinion that the hair, once formed, is independent of the organism, with which opinion he disagrees, instancing *Plica Polonica* as opposed to such a theory. He states five cases sustaining his views. (See *Dublin Quarterly Journal*, of *Med. Sci.*, 1847.)

In the Boston Med. and Surg. Journ., 1851, is reported a case of a man, thirty years old; hair scared white in a day by a grizzly bear. Was sick in a mining-camp; was left alone, and fell asleep. On waking found a grizzly bear standing over him.

A second case. Man of twenty-three years was gambling in California. Placed his entire savings of eleven hundred dollars on the turn of a card; was under tremendous nervous excitement while the cards were being dealt. He won. The next day his hair was perfectly white.

In the same article is the statement that the jet-black hair of the Pacific islanders does not turn gray gradually; but when it does turn, it is sudden, usually the result of fright or sudden emotions.

The following cases are of change of color from white to black:

Dr. Bruley (Boston Med. and Surg. Journ., 1852, p. 406), physician to the Fontainebleau, reported to the Société Médicale, Paris, in 1798, the case of a woman, sixty years old, whose hair, naturally white and transparent as glass, became jet black four days before her death (phthisis). On examination after death the bulbs of the black hairs were of immense size and engorged with dark pigment. The roots of white hairs that remained were dried up and two-thirds smaller in size (Wilson, "Skin-Diseases," p. 377).

Dr. Alanson Abbé (loc. cit.) mentions the case of Dr. Capen, who had become gray; but, on recovery from disease, his hair became quite dark.

In the St. Louis Med. and Surg. Journ., 1845, p. 310, there is reported the case of an old man, eighty-one years of age, robust and hale. Hair, from being perfectly white, became black; same of the beard. This man also presented the phenomena of second sight; could read readily without glasses.

The text-books on skin-diseases also mention cases. Several cases of sudden canities are referred to in Ziemssen.

Brown-Séquard, in his own person, noticed one day a white hair in his beard where there was none the day previous. He pulled it out, and the next day others appeared.

This was observed repeatedly, and there was no doubt that the hair in its entire length turned white in one night. Under the microscope these white hairs showed small air-bubbles in place of the normal pigment.

In a case of hemiplegia, the hair became white on the paralyzed side. The same has been reported in cases of neuralgia.

Other anomalous cases have been noted where the hair became white in patches, and where individual hairs have been seen alternately white and black at different stages of its growth, to which condition Karsh and Landois have given the name of "ringed

<sup>\*</sup> Dr. William M. Gray, Army Medical Museum.

hair," and ascribed it to an intermittent trophic disease affecting the hair-follicle.

Wilson mentions a case where the hair was gray in winter and regained its normal color in summer.

Alibert (loc. cit.) and Beizel relate cases of women with blonde hair which all came out after severe fever, and when new hair grew, it was black. Alibert also relates the case of a young man who lost brown hair during illness, and that which replaced it was red. In the case of an epileptic girl of idiotic type, with alternating phases of stupidity and excitement, during the stage of stupidity the hair was blonde; during excitement it was red. This change of color took place in two or three days, the change always beginning at the end of the hairs. Pale hairs showed an increased number of air-spaces.

It has been frequently observed that when the hair changes color gradually, the change begins in the end and extends towards the bulb.

In conversation with an eminent ornithologist\* on the change of color in the plumage of birds, he said, "I have lately been watching hairs in my moustache turn gray, and it always begins at the ends and extends to the roots."

Speaking on the subject with a lady (the one who furnished the specimens here shown), she mentioned the case of the physician who attended her at the sea-shore some years ago. The doctor's hair was long and quite gray. One day he came in to see her after having his hair cut, and she was surprised to notice that the gray hair had given place to black. Examination showed that his hair towards the ends had been white, and that nearer to the skin black. The white portion had been removed by the cutting. This phenomenon may frequently be noticed, attention having once been called to it.

The cases here collected are only a few in comparison to what might be found, but they are sufficient to prove beyond all reasonable doubt that the hair does suddenly change color under certain circumstances, and that the change takes place in existing hairs.

Analogous to changes in the color of the hair in man are the changes which occur in the lower animals. In animals and birds such changes are often periodical, as in their summer and winter coats. This occurs to a very marked degree in a great many species. Thus, the ermine in summer is dark brown, in winter pure white, with only the black tip to the

Among birds, the ptarmigan is white in winter and brown in summer. So with our familiar bobolink: yellow in fall, in spring black and buff.

As to the question whether, in birds and animals, this change takes place in individual feathers and hairs, or whether all the old plumage and fur is shed by moulting, recent investigations favor the view that it is due to both. Dr. Elliott Coues ("Fur-Bearing Animals") says it may be either or both. Mr. Robert Ridgeway (Smithsonian Institution) inclines to the opinion that in birds it is accomplished by moulting.

Dr. Louis Stejneger (Smithsonian Institution) was formerly of the same opinion, but recent studies have inclined him to the belief that there is also a change in the color of existing feathers. He was led to this change of belief by a critical study of the changes in color of the black and white fly-catcher of Europe, and especially from an examination of a series of twenty-seven specimens of the narcissus flycatcher (Xanthophygalia narcissina) of Japan. His studies in full appear in the "Proceedings of the United States National Museum, 1889." Dr. C. Hart Merriam, Ornithologist of the Agricultural Department, in a letter dated June 12, 1889, says, "The change from fall to spring plumage in birds is due to moult, without exception, as far as I am aware. the case of mammals the matter is now in dispute. Probably in the majority of cases it is due in part to moult and in part to actual change in the color of existing hairs. . . . The change in color from immaturity to maturity is always due to the growth of new hairs or feathers."

That the change in birds and mammals is due, in part at least, to change of existing coats seems established. Sometimes this change is almost sudden, as where the change of season is very abrupt. In such case, of course, there would not be time for the growth of new hair . or plumage.

In the golden plover (*Charadrius dominicus*), the black belly of summer changes to white in winter. While this change is taking place, individual feathers, part black and part white, may be seen.

In Bonaparte's gull, a common gull of our coast (*Larus Philadelphia*), the black of the head of summer changes to white in winter, principally by change in color of existing feathers (Ridgway).

Another interesting feature of this question,

<sup>\*</sup> Professor Robert Ridgway, Smithsonian Institution.

as bearing on the change in the color of the hair by drugs, is the influence of certain substances administered as food, in changing the color of tissues in some of the lower orders.

In orange canaries it has come to be an established fact that, by feeding the parent birds with a certain kind of food, the active ingredient of which is cayenne pepper, the offspring will be of an orange color, and orange-colored canaries may be seen in the stores of most bird-fanciers. A food for producing orange canaries is extensively advertised by a bird-dealer in Baltimore (Bishop). It is reported that the Indians of the Amazon cause green parrots to change to yellow and red by feeding them upon the fat of a certain fish allied to the shad (Wallace's "Amazon").

Dr. Merriam, in the letter previously quoted, says, "It is well known that food affects the color in birds. Red purple finches and pine grosbeaks invariably turn yellow when caged. This is due undoubtedly to the absence of some important food element.

"In some of the zoological gardens of Europe it is the custom to send roseate spoonbills and flamingoes to Amsterdam Garden to be recolored. The particular food by which Mr. Westermann accomplishes this end is a secret, but it is believed to be a kind of shrimp or small crustacean which has a quantity of red pigment in its shell."

In the same direction are the changes of color in other tissues by particular foods. It has long been known that when pigs are fed on madder, their bones become red. This fact has been taken advantage of by physiologists in studying the structure and development of bone. The phosphate of lime acts on the coloringmatter of madder as a mordant. When given intermittently to a growing animal, the bone presents alternate rings of red and white.

Darwin ("Origin of Species") mentions that pigs in Virginia eat the paint-root (Lachnanthes tinctoria) and their bones are colored pink, and it causes the hoofs of all but the black varieties to drop off. "From facts collected by Heusinger it appears that white sheep and pigs are injured by certain plants, while dark-colored individuals escaped. . . . On asking some farmers in Virginia how it was that all their pigs were black, he was informed that the black members of a litter were selected for raising, as they only had a chance of living." Any one travelling through Virginia can verify this statement by noticing the preponderance of black pigs in that State.

Fleurens (1824) made use of madder for coloring the semicircular canals of pigeons, to

outline the canals more distinctly. (See, also, Ferrier on "Functions of the Brain," and the writings of Vulpin, the French physiologist.)

Mr. Lucas, osteologist of the National Museum, informs me that the bones of the croware made purple by feeding on pokeberries. Ridgway says the bones of the Western fox squirrel are red, while those of its Eastern brother are white. No cause has been assigned for the difference.

See, also, experiments by Marci Paolini in 1141. ("Specimen quorundam experimentorum de vi Rubiæ ad ossa ovorumque Gallinarium putamina calcariæ coloranda." No. 1 of "Miscellani Medichi," pamphlet vol. 1149.) He gives a very good plate of the colored skeleton of a fowl, and also of its colored egg after four months' feeding Rubia tinctorium. He also gives references to other authorities, the most satisfactory of which is Belchior ("Philosophical Transactions," vol. ix., 1732), who gives an account of feeding hogs and fowls with madder-root and wheat-meal. rooster so fed died in sixteen days, and showed the condition admirably. Other writers take up the subject after him in the same publication.

It is reported that among workers in cobalt and indigo the hair becomes blue; also in artisans working with copper the hair takes a greenish hue.

The color of butterflies can be changed according to the food upon which the caterpillars are fed. More remarkable still, perhaps, is the change of color in the chameleon and in many insects, according to the color of the substance with which they are in contact.

The environment undoubtedly has a powerful influence upon the coloring of animals and birds. This is clearly illustrated in every museum of natural history. Specimens from arid desert regions are uniformly of a dull, faded appearance compared with those from regions of luxuriant foliage.

M. G. Pouchet ("Transactions of British Association for the Advancement of Science," 1872, p. 152), in his work entitled "Mechanism of Change of Color in Fishes," says that it is due to the size of contractile color-cells placed in the skin. These are under the influence of the nerves. The author found that the particular nerves controlling them (in the turbot) were nerves of the sympathetic system. By cutting the nerve supplying a particular area of the skin he had been able to retain that area unchanged in color, while the rest changed as the fish found itself on a dark or light surface.

That the eye is the means by which this change in its condition is communicated to the fish or crustacean, and that reflex action then takes place through the sympathetic nerves on the color-cells of the chromatophors, is proved by the fact that when the animal experimented on is blinded, no further change of color occurs when it is removed from light to dark, or the opposite.

See, also, the *Monthly Microscopical Journal*, 1871, vol. vi., M. G. Pouchet, on "Study of Connection of Nerves and Chromoblasts" (principally in fishes and batrachians).

The reasons assigned by naturalists for periodical change in color of plumage or fur are twofold:

- 1. Sexual selection.
- 2. As a protection against enemies.
- r. Sexual Selection.—The male takes on a brighter and more attractive appearance to facilitate the business of courtship and the securing of a mate.
- 2. As a Protection against Enemies.—In Arctic regions birds and mammals are usually white in winter, the color of the snow, so that they are with more difficulty found by their enemies.

Darwin supposes that originally only a few individuals took on this change, and these being better protected, gradually, by a process of natural selection, only the white variety was left.

It is apparent from what has been said that there is very much concerning the changes of color of the hair and other appendages of the skin in man and the lower animals that is not understood. In its normal condition the color of the hair is dependent upon the hair-bulb.

It is here that the melanine is secreted from the coloring-matter of the blood, and from this point, as the hair grows, it permeates its cells, the intensity and shades, from black to blonde, depending principally upon the amount of the coloring-matter.

In black hair the hair-bulb is larger, contains a greater amount of melanine, and the hair itself is coarser and of more vigorous growth. In those cases where the hair has turned from white to black, and minute examination has been made, this has been found true.

In the case reported by Bruley, already referred to, of a woman, aged sixty, whose hair, previously white, became jet black four days before her death, the bulbs of the black hairs are described as being of immense size and engorged with dark pigment, while the roots of the white hairs that remained were dried up and two-thirds smaller in size.

So, on the other hand, in change from dark to white, the hair is finer in texture, less vigorous in growth, and the hair-bulbs smaller.

The sudden change in canities, when due to violent emotions, can be explained in no other way than through the bulb. It is true that there is no direct vascular or nerve connection between the bulb and its hair after it emerges from the skin; but it is also undoubtedly true that there is communication by osmosis between the cells of the papilla and those of the shaft and different layers of the hair.

Wilson ("Lecture on the Skin") ascribes the cause of sudden whitening of hair to insufficient nutritive power of the skin; also suggests that there may generate a gaseous fluid in the hair in place of its normal constituents.

He says, further, that the fluids from the blood-vessels of the skin permeate the hair, and thus change in fluids may alter color.

In all of the cases of sudden change to white, where the hair has been examined, the coloringmatter has disappeared, and in its place is found an accumulation of minute air-globules.

The same is true of gray hair of advancing age. How the air gets into the capillary structure has never been explained. Two possible explanations are offered:

One is that in the destruction of the coloring-matter a gaseous substance may be developed. This hypothesis has received no support from observation. The other is that air finds entrance from without through the sides or end of the hair.

It is possible to suppose a condition of the bulb producing a vacuum in the hair-shaft that shall cause, by suction, a drawing in of air. This theory, which is proposed for the first time by the writer, I believe to be the true one, as explaining not only sudden canities, but also the gradual senile change to gray hair.

The view that the air finds entrance through the end of the hair is supported by the fact that the change of color begins at the extremity, and also by the observation that in all cases of change to white from dark hair the coloringmatter has been found to be replaced by airvesicles.

The *erector pili* muscle has an important influence on pathological changes which take place in the hair-bulb.

This minute muscle has its origin in the true skin, and, passing downward, is inserted into the base of the hair-bulb, so that when it contracts it lifts the hair outward and compresses its papilla.

The effect of sudden fright causes the hair to "stand on end" by contracting this muscle.

Temperature has its influence with animals and birds. In cold weather (winter) the change is to white, in summer to black.

Cold, we know, contracts the skin, and thus probably causes pressure on the hair-bulb. That the hair is easily influenced by external causes, as well as those which come through its bulb, is fully demonstrated. The mere fact that it can be so readily dyed and bleached artificially shows that the agents used for this purpose penetrate its substance.

Bleaching agents, such as chlorine, peroxide of hydrogen, and strong alkalies, act by removing the coloring-matter and not by adding any *whiteness* of their own.

It remains to say a few words upon the subject of changing the color of the hair by substances taken internally, and as this paper has already exceeded the limit I had set for it, I shall be brief.

- r. In the human subject the only agent, so far as I am aware, which has been charged with changing the color of the hair, when taken internally, is jaborandi. Of this sufficient has already been said.
- 2. Cayenne pepper in changing the color of canary-birds to orange.

This is a well-known fact to bird-fanciers. I tried in Washington to get a specimen to show you, but was told it was not the season for them,—that they came in the autumn; also that they soon relapsed to their original color unless the Cayenne pepper food was kept up.

- 3. The change of color in parrots by the Indians of the Amazon, from green to yellow or red, by feeding the fat of a certain kind of fish (Wallace's "Amazon").
- 4. The restoration of certain birds to their original brilliant colors at the zoological garden, Amsterdam, by feeding a kind of shrimp or small crustacean.
- 5. As analogous to the above, the effect of madder in staining the bones of pigs red and of pokeberries coloring crows' bones purple.

It might be of interest, did time admit, to study the influence of diet and habit upon the color of hair in different nations of men, as, for instance, why the Saxons have light hair and the Gauls black hair.

It is within the bounds of possibility also that discoveries may be made in the future by which the color of the hair in the human race may be modified by judicious treatment of the parents.

Some colors of hair are not popular, especially with ladies, and it is not likely that Cayenne pepper will ever become a favorite to produce the orange hue.

HYDROGEN DIOXIDE AS AN AID IN THE DIAGNOSIS OF SINUSES, FISTULA, CONCEALED PUS-CAVITIES, ETC.

BY W. M. L. COPLIN, M.D.,
Adjunct Professor of Hygiene, Demonstrator of Pathology, and
Curator of the Museum, Jefferson Medical College; Surgeon
to St. Mary's Hospital; Adjunct Professor of Pathology,
Philadelphia Polyclinic; Pathologist to the
Philadelphia Hospital.

N washing out a cavity in the bone, near the upper end of the tibia, I was extremely desirous of knowing its extent and whether it communicated with any adjoining cavity. That gas is liberated from hydrogen dioxide coming in contact with necrotic tissue, either suppurative in character or otherwise, is well known. If the hydrogen dioxide be injected into a cavity which communicates directly or indirectly through a sinuous canal, the second cavity will become inflated by the involved gas set free in the first cavity, and if we then apply the ordinary test for the detection of gas in a cavity (percussion, auscultation, palpation), we may readily prove the communication of the one cavity with the other. This is very often desirable in securing drainage, and more especially in articular and periarticular suppurative processes. Thus, in the case already cited, an abscess had presented itself over the external aspect of the head of the tibia, where it had been opened; the abscess cavity communicated with a similar cavity in the head of the tibia. Both cavities were freely curetted. So far as known, neither cavity communicated with any other, and there was no external evidence of perforation of the cartilaginous disk, between the epiphysis and the shaft, at any other point than the one located immediately under the subcutaneous abscess-cavity. By injecting hydrogen dioxide, however, it was discovered that at several points the gas inflated the subcutaneous tissues, as shown by the crepitation and gaseous emphysema which were discernible around the joint after the injection of the hydrogen dioxide; further, and most important of all, the joint was shown not to be connected with the abscess, as no gas entered between the articular surfaces. I was impressed with the applicability of this method, and I believe that in tracing out sinuses, and possibly in gunshot wounds, stabs, etc., one might be able to utilize the dioxide as a test. Hydrogen dioxide being a powerful disinfectant, combines this most excellent quality with other features desired. seems probable that vesical, utero-vesical, vesico-vaginal, and allied fistulous communications might be, in one sense, explored by this method. I have had occasion to use it once

in the study of mastoid abscess, in which communication between the auditory canal and the abscess-cavity was proved by injecting hydrogen dioxide into the ear and at the same time noting the gaseous distention of the tissues over the mastoid. That it might be possible to force infectious material into non-infected tissues by this method of exploration seems not improbable, but an incision, probe, or any other method affords equally tenable objections, and but few, if any, other methods combine the use of an efficient germicide with the means employed, as does this. Moreover, wherever the gas did penetrate, the knife would follow for evacuation and thorough disinfection.

RULES FOR THE NURSING OF OBSTET-RICAL CASES AS PRACTISED IN THE MATERNITY DEPARTMENT OF, THE HOSPITAL OF THE UNIVERSITY OF PENN-SYLVANIA.

> COMPILED BY FRANCIS LIEBER, M.D., Resident Physician.

TOO much care cannot be taken of women during the period of gestation prior to confinement, since their welfare depends as much upon careful nursing at this time as does their good recovery upon systematic and thorough treatment during delivery and the puerperium.

Any pain having the character of a laborpain—well known by multiparæ, and easily recognized by primiparæ as beginning generally in the back, passing forward, or at the umbilicus, returning at regular intervals should be reported at once. Delay in obstetrical work is often dangerous.

Preparation.—Should the woman be found in labor, she should be given a bath; her bowels should be evacuated by an enema, urine voided, and clean clothing throughout given.

The bed upon which the patient is to be delivered should now be made ready. The mattress is protected by a full-length mackintosh; over this a sheet; then another full-length mackintosh and a second sheet. Upon this sheet place a half-mackintosh, in the middle of the bed, covered by the delivery-pad.

The delivery-pad can be made of sterilized cheese-cloth, filled with bichloride jute, or several layers of disinfected flannels and blankets, about one yard square.

The patient is now put to bed, and preparation made for the delivery and reception of the child.

For General Use.—Two empty basins: douche-jar and support, the douche consisting of creolin (two-per-cent. solution), made by adding five fluidrachms of creolin to two pints of water; one pitcher of cold water; vinegar; bichloride, I to 2000, in small basin; carbolic, 1 to 20, in instrument-pan; absorbent cotton; six towels; one can of ether and ether-cone; whiskey; hypodermic syringe; two medicineglasses; fluid extract of ergot; cosmoline; soft-rubber catheter; silver catheter; forceps, placed blade down in an empty pitcher (if the forceps are to be used, boiling water is to be poured over them, allowing them to remain in the pitcher); obstetrical instruments; ice and hot water should be easily accessible.

For the Mother.—Two sheets, draw-sheet, blanket, night-dress, binder, three dressingtowels, an occlusive pad, napkin, and safetypins.

For the Child.—Baby-tub, large basin, covered hot-water bag, flannel receiver, two cotton receivers; nitrate-of-silver solution, ten grains to one fluidounce; boric-acid solution, fifteen grains to one fluidounce; dropper belonging to each solution, mouth-rags in boric-acid solution; iodoformized bobbin or antiseptic silk, in two strips, each ten inches long (prepared by soaking in ether, one fluidounce; pulverized iodoform, two drachms, for six hours); scissors in carbolic solution, r to 20; sweet oil.

In Case of Laceration.—Rubber perineal-pad, dressing-towels; instruments in carbolic solution (1 to 20), dressing-forceps, small scissors, needle-holder, needles, large and small; in alcohol, catgut, silk-worm gut; bichloride sponges and bichloride solution (1 to 2000); iodoform powder.

Nursing during Delivery.—The nurse should now wash her hands, first in soap and water, then in alcohol, then in bichloride solution (I to 2000), in which they should be kept for at least one minute. (This cleansing should be observed throughout the case, and practised when the patient is to be catheterized or to have her breasts treated, etc.) The nurse is then ready to assist during the delivery.

When the patient is put to bed, at no time should she be left without an attendant. The frequency and strength of the pains should be noted, and the rupture of the membranes reported and the time taken.

As soon as the head is born, the baby's eyes should be washed with the boracic-acid solution, and a drop of the nitrate-of-silver solution placed in each eye; fluid extract of ergot, I fluidrachm, with a little water, should

be given to the mother, and the flannel and cotton receivers for the child, the braid for tying the cord, and the scissors be got ready for immediate use.

As soon as the child is born, a basin is brought to the bed for the reception of the placenta.

When the cord is cut, the baby—well oiled with sweet oil and wrapped in the receiving cloths—is laid aside until the mother is attended to. A covered hot-water bag can, with advantage, be placed near the baby to avoid chilling caused by the change in its surroundings.

Nursing during the Puerperium.—After the placenta has been expelled, the mother's bed should be remade, the binder put on over a compress of towels above the uterus, and an occlusive pad and napkin fastened to the binder.

The patient must lie on her back for three days, and without a pillow for the first six hours. She may be moved from side to side on the bed and rubbed with alcohol daily.

If, after twelve hours, she is unable to void urine, she must be catheterized. Cleanse the meatus with bichloride solution, 1 to 4000. If necessary, catheterize at least once every eight hours.

The occlusive pad should be changed about six times in twenty-four hours for the first three days, and subsequently as frequently as needful. At each change the parts are to be thoroughly washed with bichloride solution, I to 4000. The last pad taken off should be saved for the doctor's inspection.

The temperature for the first five days should be taken every four hours, and then twice daily unless other orders are given.

The Patient's Diet.—First forty-eight hours: liquid, with a little toast and butter. Second forty-eight hours: toast, eggs, chicken, and puddings.

After the bowels have been moved, the diet may be more liberal, gradually returning to a full diet.

The Child.—After being well oiled with sweet oil, the baby is to be washed with Castile soap and water; the temperature of the water should be about 90° F. The cord is dressed by dusting it with a powder of salicylic acid one part and starch five parts, placing around it some salicylated cotton cut for the purpose. Watch carefully for bleeding.

The baby should now be dressed by putting on a flannel binder twice around the abdomen; this binder had better be sewed on; a diaper, flannel shirt, knit shoes, one skirt of flannel, and, finally, a slip and knit sack. Wrap it in a baby blanket and put it in the crib, allowing it to lie first on one side and then on the other.

The baby should receive a daily bath in the warmest part of the room, the water having a temperature of 90° F. Use Castile soap, and in washing avoid the eyes. Dress the cord after each bath as directed. Powder the baby with a powder of lycopodium, compound talcum, or lycopodium and oxide of zinc, and dress as before. The cord is shed about the third or fourth day, and when shed, the stump should be dressed for a day or two with the diluted salicylic-acid or boracic-acid powder.

Feeding.—The baby should be put to the breast once every four hours for the first forty-eight hours, then once every two hours during the day from 7 A.M. to 9 P.M., and from two to three times at night, no other food being given it.

After every nursing the nipples must be carefully washed with warm water and Castile soap, and oiled with a little sweet oil.

The Massage of the Breasts.—The true milk secretion may be expected about the third day. Should it be noticed then or at any time that the breasts are hard and unrelieved by the baby's nursing, they should be given systematic massage and pumping. The nurse must first cleanse her hands thoroughly and wash them in bichloride solution, 1 to 2000; then oil them with a little sweet oil to avoid irritating the skin over the breasts, and, by a gently stroking motion directed from the base to the nipple, relieve the breasts of milk and soften the so-called "cakes." The breastpump should also be used, if necessary, and with it several ounces of milk drawn from each breast. After this process, which should be carried out as often as necessary, the breasts must be washed with Castile soap and water, oiled, and covered by a cloth and mammary binder. This binder consists of a double piece of muslin, cut so as to allow straps to come over the patient's shoulders. It is pinned with safety-pins in the median line in front, starting at the point nearest to the patient's waist, so as to provide support as well as evenly-distributed pressure (Miss Murphy's binder). A pledget of absorbent cotton is placed between the breasts to prevent the skin surfaces rubbing on one another.

By the care to secure perfect cleanliness about the patients on the part of nurses and medical attendants the mortality of the hospital has been kept nil for four years.

OPEN INCISION TENOTOMY, WITH RE-PORT OF A CASE IN WHICH THE TENDON WAS SUTURED BY THE ANDERSON METHOD.

BY JAMES F. E. COLGAN, A.M., M.D., Chief Clinical Assistant Orthopædic Department, Jefferson Medical College Hospital; Chief of Dispensary of St. Mary's Hospital.

DOTH Galen and Hippocrates advised against the suturing of tendons, and so dominating have been the views of these great pioneers in medicine that their teaching has persisted till comparatively modern times, Ambroise Paré, for instance, fully according with them.

In traumatic cases tendons were sutured more than two centuries ago. Operations upon these fibrous bands for orthopædic purposes were proposed and carried out much later.

The first recorded operation of tenotomy was done by the open method, though suturing was not performed. In this relation the following quotation is interesting ("Herster's Surgery," Part II., page 333; London, 1777):

"It is observable that this practice (suturing of tendons) has lain neglected by almost all the ancients, in comformity to the saying of Hippocrates, 'that a nerve or tendon, being cut asunder, can never grow nor unite afterwards,' which gave them an aversion to this operation, inasmuch as a slight puncture in a tendon often excites the most grievous symptoms. Yet that there were some in the time of Galen who practised this suture of the tendons may be concluded from his advising against it, and which advice was rigidly adhered to by the generality, and especially Ambroise Paré. However, this has been sufficiently considered and approved of by the Arabian physician Avicenna, Guido de Cailico, Sulicetus, Rogerius, Lafrancus, Brunus, and others among the surgeons; and yet, notwithstanding this, the practice was either unknown or rejected as dangerous by their successors till at length Vestingius performed it in the last century. This operation succeeds best when the wound is recent or lately inflicted, but it may be also undertaken on the second, third, or fourth day.

"The first operation of tenotomy is ascribed to Roonhuysen, of Amsterdam, who divided the sterno-mastoid in 1670. All the earlier operations were carried out by the open method. The tendon was exposed by reflecting the skin, and was then divided.

"Later, we find that a knife was introduced beneath such a tendon, as the tendo Achillis, and that structure was divided simultaneously with the skin" (vol. i. 753).

The great discovery of subcutaneous tenotomy was, however, reserved for the genius of

L. Stromeyer, of Hanover, who first performed the operation in February, 1831, and published his first six cases in 1834.

Dr. David L. Rogers, of New York, first performed tenotomy in this country. "He divided the tendo Achillis in 1834" (Sayre, page 4).

It is sufficiently clear on reading the history of tenotomy that the open method was first practised universally; this then gave place to the subcutaneous incision. At the present day the open method is again coming into favor.

The advantages of the subcutaneous method are, that it requires a very small puncture. There is comparatively no hemorrhage unless a large vessel is divided, when the operation must be abandoned till collateral circulation is set up. There is no suppuration if the instruments are clean.

The disadvantages of the subcutaneous method are, that when you cut tissues under the skin, there is always a possibility of wounding structures you wish to avoid. Before the advent of antisepsis it was justifiable to perform the subcutaneous operation, because suppuration was usually avoided, but to-day this objection does not hold.

The great field for suturing tendons for correction of deformity is afforded by those cases suffering from talipes equinus. This is especially so when the deformity is due to infantile paralysis.

After tenotomy, the new tissue uniting the divided ends of the tendon is not actually tendinous tissue. It is true that in the majority of cases it will act fully as well as tendon, but in a large structure like the tendo Achillis there is always a possibility of the union being imperfect. R. W. Parker acknowledges that several authors express the same opinion, though he says it never occurred in his prac-In deformity due to infantile paralysis, there is always a likelihood of the new tissue becoming so attenuated as eventually to snap asunder, especially when the gap is large. That this is likely to occur is proved by the fact that within a few months a child was brought to the Jefferson Medical College Hospital for treatment of club-foot. The child had been operated on by an eminent surgeon for relief of deformity caused by talipes equinus, the subcutaneous method being employed. When the child appeared at the hospital the deformity was of the calcanean form, due to the elongation of the tissue thrown out between the divided ends of the tendon. Professor H. Augustus Wilson decided to attempt to shorten the tendon and suture it at a correct point. cision being made, the tendon was found to be

so attenuated that there was hardly sufficient space to introduce the finest needle in order to suture the ends together. Consequently the prognosis as to function was guarded.

This suturing operation is particularly adapted to equinus occurring in adults, since the gap between the divided ends is naturally larger and the tendon is more powerful than in children.

In the operation by which the tendon is slit longitudinally and sutured after it has been divided, we have a method overcoming the disadvantages inherent to the ordinary tenotomy. The tendon is practically composed of the same tissue throughout its length.

The first operator to report a case of deformity corrected by the operation of slitting a tendon and then suturing the end was Professor W. W. Keen, of Philadelphia. The operation had been done at the suggestion of Dr. S. Weir Mitchell. The same method had been employed over a year before by William Anderson, of England, but was not made public till some time after Professor Keen's case had been reported. In the operation as performed by Anderson and Keen the tendon is slit longitudinally for the distance of an inch or two, then divided at the opposite ends of the incision. The part is put in the corrected position, and the divided ends are sutured. By this method we have the tendon lengthened by a definite amount. Both Anderson and Keen use this method for contracted tendons, while Professor H. Augustus Wilson proposes the same method for shortening elongated tendons.

In the Centralblatt für Chirurgie, No. 12, Dr. Truka reports a method of suturing tendons that he has employed for some time. In this operation part of the tendon is turned down and is sutured to the other end of the divided tendon, the sutures being also carried through the other sides of the ends. This, though an ingenious method, is inferior to the Anderson method.

Several operations by the Anderson method have been performed at the Jefferson Medical College Hospital. The report of one of these is as follows:

Miss L. S., aged seventeen, came to the Jefferson Medical College Hospital October 20, 1892. There was phthisis in the family.

The trouble first commenced when the patient was three years old. On one side of the foot at the ankle-joint there was an enlargement; pain and stiffness were present also. The enlargement was succeeded by a fluctuating tumor which, opening itself when she was eight years old, proved to be an abscess.

From the history it cannot be ascertained whether the abscess communicated with diseased bone or not, nor is it known how long the sinus remained open. After the opening healed she was forced to use crutches. She then began to walk on her toes. From the age of eight years she used constitutional and local treatment, consulting several physicians in the mean time.

When she appeared at the hospital the tendo Achillis was found to be contracted, and there was an improper motion of the ankle-joint; on over-extension the foot became swollen. There was, of course, marked equinus, due to the contracted tendo Achillis.

As will be observed from the history, the deformity was acquired. The patient had an abscess, which no doubt communicated with the bone, which forced her to keep the foot in a comfortable position. As she suffered great inconvenience from the deformity, operative interference was desired.

The field of the operation being rendered aseptic, forced flexion of the foot was made for the purpose of rendering the tendon prominent. The tendon was then freed, and an incision of an inch and a half in length was made longitudinally through its middle. Cross-sections were made at ends of the incision diagonally opposite each other, thus dividing the tendon. The divided tendon was then lengthened by sliding the divided ends past each other till the foot was placed in the correct position; then the tendon was united with catgut sutures. There being no vessels in that place to wound, drainage was not necessary, and the skin was brought together with sutures. A plaster-of-Paris dressing was applied to keep the foot in the corrected position, after which the patient was placed in bed, where she remained for one week.

On November 10 the plaster-of-Paris dressing was removed, when the tendon was found to be united. The gaps were filled with the new fibrous tissue thrown out. The plaster of Paris was discarded, and she was directed to use a crutch for a short time.

On November 17 she was discharged from the hospital. The crutch was thrown aside December 13, and she was provided with a brace, which was applied inside the shoe, to prevent any future trouble in the previously inflamed joint.

The patient reported off and on at the hospital till June 1, 1893, when she left for her home in Utah Territory. The os calcis and astragalus were rigid, but there was increased motion in the ankle-joint, and she walked with

very great ease, the only inconvenience being a little pain now and then in the ankle-joint, due, no doubt, to the original trouble.

IIIO FRANKFORD AVENUE.

A STUDY OF THE INFLUENCE OF CHLO-ROFORM UPON THE RESPIRATION AND CIRCULATION.

A CONTRIBUTION FROM THE LABORATORY OF EXPERIMENTAL THERAPEUTICS OF THE JEFFERSON MEDICAL COLLEGE

OF PHILADELPHIA.
TO SURGEON LIEUTENANT-COLONEL

Being a Report to Surgeon Lieutenant-Colonel Edward Lawrie and to the Government of His Highness the Nizam of Hydreabad.

By H. A. HARE, M.D.,

Professor of Therapeutics in the Jefferson Medical College,

E. Q. THORNTON, M.D., Demonstrator of Therapeutics, Jefferson Medical College.

O any one who endeavors to view the subject of chloroform anæsthesia in an entirely impartial light two objects raise themselves so high above all others that they form the peaks about which the smaller questions must cluster. The first object on which the judicial eye rests is the firm belief of many clinicians that chloroform may cause sudden cardiac death; the second object to be seen is the statement of the Hyderabad Chloroform Commission that death from chloroform is never due to cardiac failure. In the support of the first belief we have not only wide clinical observation, but also the experimental evidences of a number of investigators. In support of the second statement we have an array of experimental study not equalled by any other research extant, associated with an enormous number of negative observations on man. Negative observations because Lawrie alone in twenty-five thousand cases has never had a cardiac death.

The controversy concerning the action of chloroform upon the animal organism has been waged so incessantly for many years, and has led to such extraordinary efforts for its elucidation and final decision, that any one who attempts to take part finds himself almost swamped by the number of statements and opinions which he is forced to regard. We have therefore approached this research feeling it was no ordinary task, and that a path already so well travelled must be gone over with the utmost care if anything new or of value was to be discovered.

In March, 1892, Surgeon Lieutenant-Colonel Lawrie, whose interest in this subject is recog-

nized by the medical profession the world over, wrote to one of us (Hare), asking that another chloroform research be instituted, for which the government of His Highness the Nizam of Hyderabad would pay. The express object of the research was the reconciliation of at least some of the contradictory conclusions reached by various experimenters during the past few years.

From the immense number of observations. in regard to the action of chloroform, in the laboratory and in the operating-room it is evident that sufficient data are at hand to give us material to reach positive conclusions, and that the contradictory results hitherto obtained must have been reached by misinterpretation and error in experimental method, tinctured perhaps by opinions formed previous to the completion of a line of study. There are certain facts in regard to chloroform which few will deny, the chief of which are that it has the advantage of rapid action without disagreeable preliminary or subsequent symptoms, its bulk is small, and its odor agreeable; but, more important than all, it is much more dangerous than ether.

Though the Hyderabad Commission in their preliminary conclusions (page 30, paragraph 43) assert that ether is as dangerous as chloroform if given sufficiently to produce true anæsthesia, we believe that the safety of ether is so universally recognized that this conclusion of the Commission can only be excused by the remembrance that ether has probably been used as little by those who wrote this paragraph as chloroform is used in many parts of America. This possibility is made a probability when we read that "if surgeons choose to be content with a condition of semi-anæsthesia, it can no doubt be produced with perfect safety, though with discomfort to the patient, by ether held rather closely over the mouth. Such a condition of imperfect anæsthesia would never be accepted by any surgeon accustomed to operate under chloroform." That this statement shows, to put it mildly, that the writer knows not whereof he speaks is proved by the universal employment of ether by hundreds of the best surgeons the world over in preference to chloroform. Further than this, medical literature contains so many statistical papers showing the small percentage of deaths from ether as compared with chloroform that this point need not

There are certain other points in regard to the action of chloroform which may be put aside as settled, and therefore not needing further study, being generally received as beyond criticism, and we have made no experiments looking to their reproduction, but have devoted our efforts solely to the questions over which discussion still proceeds. Thus, all investigators concur in the statement that chloroform, even in ordinary therapeutic quantity, acts as a powerful and constant depressant to arterial pressure. This conclusion has been reached by Bowditch and Minot and Coats, H. C. Wood and H. A. Hare, Gaskell and Shore, the Hyderabad Chloroform Commission Nos. 1 and 2, and by every experiment in the research now carried out which forms this report. There is no evidence to the contrary, and practically it has never been denied. Gaskell and Shore state, however, that chloroform may cause anæsthesia without lowering bloodpressure, and that chloroform causes primarily a rise of pressure. They also believe that the chief cause of the fall of arterial pressure is cardiac and not vaso-motor depression. The rise we have never seen except from struggles, and we have never been able to produce anæsthesia without lowering the blood-pressure, even when the drug was used in the smallest quantity capable of causing anæsthesia and given as slowly as possible. We agree with the statement of the Hyderabad Commission that a fall of blood-pressure always occurs when chloroform anæsthesia is produced.

We are also forced, as the result of our studies, to differ entirely with Gaskell and Shore in their statement that the fall of arterial pressure is due primarily to a weakening of the heart's action and not to paralysis (depression?) of the vaso-motor centre. We believe that both factors cause the fall, but that the dominant factor is vaso-motor depression, because, as will be seen in several of our tracings, the pulse-waves were quite strong, though the blood-pressure, through vaso-motor relaxation, was absolutely to the abscissa line, and we agree with Lawrie that no conclusions as to the action of chloroform when inhaled can be drawn from the injection experiments of Gaskell and Shore into the arteries. One of our reasons for this belief is the entire difference in method necessary and the corresponding difference in result. Another reason is that any powerful drug injected into the brain will cause a rise of blood-pressure. Even nitrite of amyl, the prince of vaso-motor paralyzants, will do this. (See Gaskell and Shore, page 17, paragraph 68.)

We also believe that results obtained by such interesting methods of experimentation as employed by Gaskell and Shore are not capable of giving us positively reliable information, as the conditions are so utterly at variance with

those in which chloroform is given to man; and, further, that their methods are such as to give room for fallacious results, which cannot be excluded by the greatest caution on the part of experimenters, experienced as they are.

Secondly, it is not denied by any one, that we know of, that chloroform exerts a powerful depressant, paralyzant action on the respiratory centre. This is agreed to by clinicians and by every one who has experimentally studied the action of the drug on the lower animals. (See results of collective investigation.)

Thirdly, it is universally conceded that chloroform is a lethal agent of great power when brought in direct contact with highly-vitalized tissues.

Aside from these facts, there are a number of others in which we find ourselves strictly in accord with the conclusions of the Hyderabad Commission. In order to make clear those points in which we agree and differ, we print the conclusions reached by the Commission, and to be found on page 17 of their official report.\*

"1. Chloroform, when given continuously by any means which insures its free dilution with air, causes a gradual fall in the mean blood-pressure, provided the animal's respiration is not impeded in any way, and it continues to breathe quietly, without struggling or involuntary holding of the breath, as almost always happens when the chloroform is sufficiently diluted. [See our Experiments 1, 4, 13, 23, and 27 (Hare and Thornton).]†

"As this fall continues the animal first becomes insensible, then the respiration gradually ceases, and, lastly, the heart stops beating. [In every one of our experiments this course was followed as soon as struggles ceased (Hare and Thornton).]

"If the chloroform is less diluted the fall is more rapid, but is always gradual, so long as other conditions are maintained; and however concentrated the chloroform may be, it never causes sudden death from stoppage of the heart. The greater the degree of dilution the less rapid is the fall, until a degree of dilution is reached which no longer appreciably lowers

<sup>\*</sup> These are not the final conclusions, published in the Lancet and elsewhere, which were drawn up for general readers, but from the more scientific and accurate deductions of the research itself.

<sup>†</sup> It is unfortunate that space does not permit the reproduction of every experiment made, or even every part of the ones given. As far as possible every valuable part has been included.

the blood-pressure or produces anæsthesia." (See below.)

With this entire statement our results are practically in accord, but we would like to qualify the words "however concentrated the chloroform may be, it never causes sudden death from stoppage of the heart" by saying it never has caused sudden stoppage of the heart in any of our experiments unless respiration ceased primarily. We make this modification because, as we will point out later in this report, we believe circumstances may exist in which the diseased heart may stop suddenly under chloro-On the other hand, we do not believe that it is possible in a lower animal (the dog) to cause cardiac death by the freest possible use of chloroform by inhalation without causing primary respiratory arrest, and respiratory arrest having taken place, the death which follows is partly due to asphyxia and partly to direct cardiac failure and vaso-motor paralysis.

In reaching this conclusion one of us (Hare) is well aware that his position is directly opposed to his conclusions published in a joint paper by H. C. Wood and himself in the Medical News of February 22, 1890. tracings shown in that paper, to prove that chloroform was capable of causing primary arrest of the heart, are all (except No. 5) tracings of experiments in which chloroform was injected directly into the jugular vein, which is an entirely different thing from its absorption from the lungs into the blood well mixed with air. Even quinine injected into the jugular vein will cause cardiac arrest. Further than this, this research has shown us that in only one of the three tracings presented by Wood and Hare did death certainly occur from cardiac failure. even when the drug was given intravenously, namely, in their tracing No. 4. Perhaps if artificial respiration had been resorted to recovery would have occurred, as our experiments have proved is possible even after both heart and respiration have apparently stopped. (See Nos. 3, 13, 17, and 27, Hare and Thornton). The pulse-line in Tracing No. 3 (Wood and Hare) is more than reproduced by jugular injection in No. 14 in this research, and No. 5 (Wood and Hare) by inhalation in No. 23 (Part XV. and XVI.) of this research, and it will be noted that though the heart failed in these experiments to make a pulse-mark, for the time being, that it eventually recovered sufficiently to do so or was found beating when the chest-wall was opened or a needle was thrust into the heart. Again, in Experiment 13, in this research (Hare and Thornton), it will be seen that when the pen was practically at the abscissa it suddenly rose again. The heart was in all these experiments very weak, but it recovered rapidly from its weakness, so we must conclude that the cardiac condition was one of weakness or depression and not paralysis or death.

"2. If the inhalation is interrupted at any stage, the fall of pressure still continues at a rate which depends altogether on the rapidity of the fall while the chloroform was being inhaled. This after-fall is probably due to absorption of a portion of the residue of chloroform in the air-passages after the stoppage of the inhalation. In this way it often happens, if chloroform is given rather freely, that though the respiration may be going on when the chloroform is discontinued, it afterwards stops. [Our results are identical with this conclusion.]

"3. If the administration of the chloroform is stopped at an early stage the pressure very soon begins to rise again, and gradually becomes normal. [See our Experiments 8, 13, 17, 23, and 27 (Hare and Thornton).] But if the chloroform is pushed further, there comes a time, not easy to define, when the bloodpressure and respiration will no longer be restored spontaneously, although the heart continues to beat after the inhalation is stopped. [See our Experiments 1, 5, 10, 13, 16, 17, 18, and 23, all of which confirm this conclusion (Hare and Thornton).]

"4. If the fall has been very gradual, it may occasionally happen that the respiration stops completely, and still the blood-pressure rises again, the respiration recommencing spontaneously in the course of the rise. [See our Experiments 12, 13, 17, and 26 (Hare and Thornton).] In the same way, when the inhalation has been discontinued, the respiration may stop during the after-fall of the bloodpressure and begin again spontaneously. As a rule, if the respiration has stopped, or even becomes slow and feeble at the time when the inhalation is discontinued and artificial respiration is not resorted to, the fall in blood-pressure will continue until death ensues. See end of our Experiments 1, 5, 10, 13, 17, 18 (Hare and Thornton).

"5. There are two conditions which frequently disturb the gradual fall of the blood-pressure,—viz., struggling and holding the breath,—and it is only by great care that they can be avoided in animals. [Our results are entirely in accord with this.]

"6. Struggling, independently of any change in the respiratory rhythm, appears generally to raise the blood pressure. [See our Experiments 13, 15, 16, 27 (Hare and Thornton).] In one case of a dog much weakened from phosphorus the pressure fell every time he struggled. [We agree with the first sentence, but believe that struggling and change in respiratory rhythm are inseparable. Of the facts in the second sentence we have no knowledge.]

"7. When struggling is accompanied, as it often is, by acceleration of the respiration and pulse, especially if the respiration is deep and gasping, it leads to a more rapid inhalation of chloroform, and consequently to a more rapid fall of blood-pressure and a greater after-fall. [Compare our Experiments (Hare and Thornton) 13, 16, and 27 with Experiment 23, in which there was no struggling and a gradual fall. In order to keep the chloroform-cap or inhaler in its place during the animal's struggles, the administrator is obliged to hold it down more tightly over the nose and mouth, and this materially assists in hastening the rapidity of the inhalation, and consequently of the fall in blood-pressure. [We agree with this statement.]

"8. The effect of involuntarily holding the breath, which, as anybody can prove by experimenting upon himself, must happen when an inhaler saturated with chloroform is first applied to the face, is much more remarkable, the pressure often falling with great suddenness, while the heart's action is markedly slowed. [See Experiments 1 and 5 of Wood and Hare, No. 1 being reproduced in this paper.] As soon as the animal draws breath again the pressure rises as suddenly as it fell, but the gasping respiration which succeeds then causes very rapid inhalation of chloroform with immediate insensibility and a rapid fall of blood-pressure which becomes dangerous. [See our Experiment 13 (Parts IV., V., VI.), and Experiment 17. This fall is sometimes dangerous and sometimes not. tainly not a dangerous fall in Tracing No. 16 under atropine. Taking the paragraph as a whole, we agree with its statements entirely, and believe that the first action named is solely due to reflex inhibition through vagal and trigeminal irritation (Hare and Thornton).]

"9. The combination of struggling with alternate holding the breath and gasping, which results if chloroform is applied closely to the face without sufficient dilution with air, causes violent fluctuations and then a speedy fall of the blood-pressure, which very soon leads to a dangerous depression with deep insensibility and early stoppage of the respiration: [See our Experiments 13 and 27 (Hare and Thornton).] The after-fall under these circumstances is rapid and prolonged (sic).

[We also find it rapid.] It is this combination of events which causes struggling animals to go under chloroform so quickly.

"10. The effect of holding the breath may occasionally cause a temporary fall of blood-pressure after the chloroform inhalation has been stopped, or even when the animal is quite out of chloroform. This fall is recovered from directly the animal breathes again. [We concur in this.]

"II. Slight, continuous asphyxia, such as is produced by pressure on the neck by straps, a badly-fitting muzzle, or hinderance of the chest-movements by the legs being too tightly bound down, gives rise to exaggerated and irregular oscillations of the blood-pressure and slowing and irregularity of the heart's action. If it leads to, or is accompanied by, deep gasping inspiration, it is apt, like anything else which causes this, to increase the intake of chloroform and bring about a rapid decline of blood-pressure. [We concur in this conclusion.]

"12. Complete, or almost complete, asphyxia, as by forcibly closing the nose and mouth, or closing the tracheal tube after tracheotomy, has an effect similar to, but more marked than, that produced by holding the breath, and the character of the trace corresponds precisely to that produced by irritation of the peripheral end of the cut vagus. The pressure falls extremely rapidly, sometimes almost to zero, and the heart's action becomes excessively slow or even stops for a few seconds.

"13. This effect of asphyxia is the result of stimulation of the vagi. The proof of this is (a) that the trace corresponds exactly, as stated above, to that produced by direct irritation of the vagus; (b) division of both vagi entirely abolishes it; and (c) the administration of atropine, which paralyzes the vagus, also abolishes it. [Tracing No. 15 Part I. (Hare and Thorn-That vagal irritation does account for some of the circulatory disturbance is no doubt true, but in reality the changes are chiefly vasomotor in character. We have not found that either vagal section or vagal paralysis with atropine prevented these phenomena, although it may modify them. See Tracing Nos. 10 and 17 (Hare and Thornton).]

"14. In Trace 158 (Fick, No. 4), which was taken during asphyxia after a full dose of atropine, it will be seen that there is an alternately slow and rapid pulse, according to the phase of the respiratory movement, but no continued slowing of the heart, as in vagus irritation. But there was still a distinct fall of pressure after the atropine when the breath was held,

and it was thought that the slowing of the pulse above noted in this condition might be due to the disturbance of the heart from tension in the pulmonary vessels in the absence of respiratory movement rather than to irritation of the vagi. To test this point Experiment 184 was instituted. In this experiment the dog's chest was forcibly inflated with bellows connected by a tube with the trachea, and the effect of this proceeding was to cause a fall of pressure and slowing of the heart, exactly the same as in involuntary holding of the breath. The dog was then poisoned with atropine, after which inflation of the chest still caused a fall of pressure, but without slowing of the heart (vide Fick, Nos. 8 and 9). The fall of pressure must be in some degree independent of vagus irritation, which, however, usually accompanies it.

"15. It only remains to be considered whether the slow action or temporary stoppage of the heart, with great fall of pressure produced by vagus irritation, is in itself an element of danger in chloroform administration, and if it is not, wherein the danger actually lies. [See note to paragraph 16 (Hare and Thornton).]

"16. The experiments in which deliberate irritation of the vagi was carried on during anæsthesia show unmistakably that irritation of these nerves diminishes rather than enhances the danger of anæsthetics. The effect upon the heart is never continuous, and as the vagus becomes exhausted, or when the irritation is taken off, the blood-pressure rises again, as it does when the same result is produced by asphyxia. The slowing of the heart and circulation which is produced by irritation of the vagus by any cause, such as holding the breath in chloroform administration, retards the absorption and conveyance of chloroform to the nerve-centres, just as holding the breath, whether voluntary or involuntary, prevents chloroform from entering the lung; and of itself slowing or temporary stoppage of the heart in chloroform administration is not dangerous. [We shall point out later in this report how we differ from this conclusion, for we believe that true fatty heart, plus ventricular engorgement, plus vagal irritation, plus possible valvular disease, and, finally, plus extreme vaso-motor relaxation, may result in death in frightened persons. While this is not, scientifically speaking, a cardiac death from chloroform, practically the chloroform is the last straw which upsets the cardiac balance. However, Lawrie and his colleagues recognize this as well as ourselves (see paragraph 38, Hare and Thornton).]

"17. To answer the second part of the last question in paragraph 15 is easy enough, if it is kept in mind that the effect of vagus irritation upon the heart is never continuous; and in chloroform administration, as the pressure rises again after the slowing of the heart and temporary fall of pressure produced by any form of asphyxia, violent respiratory efforts with bounding heart's action lead, as in the case of struggling, to a rapid and dangerous inhalation of chloroform, and consequent rapid and dangerous decline in blood-pressure. [We believe in the healthy animal or man that this is true. ] It is, in fact, the temporary exhaustion of the vagi after stimulation that is to be feared, and not the actual stimulation as long as it is continued.

"18. In accordance with this fact it will be found that in chloroform administration neither holding the breath, even if involuntary, or vagus inhibition can be kept up beyond a certain time; and if the chloroform is not removed from the face, one or both of two things happen: (1) when the animal breathes again it takes deep and gasping inspirations, the lungs become filled with chloroform, and an overdose is taken in with extreme rapidity; or (2) when the restraining influence of the vagus is taken off the heart, through the irritation ceasing or the nerve becoming exhausted, the heart bounds on again, and the circulation is accelerated in proportion. The blood then becomes quickly saturated with chloroform, and an overdose is at once conveyed to the nervecentres. [We believe this is true of the healthy heart, but not of one engorged with blood which has undergone fatty degeneration. This is only an hypothesis, however, as we have no experimental basis for this belief (Hare and Thornton).] The theory which has hitherto been accepted is that the danger in chloroform administration consists in the slowing or stoppage of the heart by vagus inhibition. now shown to be absolutely incorrect. is no doubt whatever that the controlling influence of the vagus on the heart is a safeguard, and that it is the exhaustion of the nerve which is dangerous. [We believe that this conclusion is more theoretical than practical (Hare and Thornton).]

"19. It can be readily understood how a condition in which the pulse is rapid and bounding, with high blood-pressure, leads to more rapid absorption of chloroform from the lungs and a more rapid propulsion of the chloroformed blood to the medulla oblongata, and consequently to a more rapid paralysis of the respiratory and vaso-motor centres and pre-

cipitous fall in the blood-pressure. Such a condition is produced in some cases by ether or by division of both vagi, or by a full dose of atropine. Not only is the poisoned blood carried more swiftly to the vital centres in these cases, but added to this there is the fact that as the heart is already doing its utmost before the chloroform is given, it is unable to stave off by increased work the fall in pressure that occurs when the vaso-motor centre is paralyzed. On the other hand, it seems clear from Experiment 92 that the direct action of chloroform upon the heart's substance is not the cause of the fall of pressure that occurs when it is inhaled.

[That we (Hare and Thornton) agree in general with these conclusions (paragraphs 15, 16, 17, 18, and 19) is shown by the following extract from the research of Wood and Hare in the *Medical News*, February 22, 1889:

"The theory has from time to time found advocates that the vapors of chloroform may, by irritating the larynx and adjacent parts. cause arrest of the heart through a reflex inhibition. To test the possibility of this, we have made a number of experiments. the tracheal canula is tied tightly into the trachea some distance below the larynx, it is evident that the latter organ is isolated from the general respiratory tract, and that chloroform injected into it will exert only a local in-In all the experiments which we have made in the way just indicated, the injection has been followed by an immediate and very pronounced primary fall of the pressure, followed, after a very brief interval, by a rise, which usually reaches decidedly above the As an example of one of these experiments, we give the preceding tracing. [See Tracing 1, Wood and Hare, here appended.]

"The primary fall of arterial pressure, which has just been spoken of, can scarcely be produced except by reflex inhibition of the heart or of the vaso-motor centres, while the secondary rise is probably the result of a reflex vaso-motor spasm. In order to throw light upon this question, we have made experiments by injecting chloroform into the larynx after division of the pneumogastric nerves, the trachea being ligated so as to prevent the entrance of the anæsthetic into the lungs. [See Tracing 2, Wood and Hare, here appended.]

"In making practical application of the experiments thus discussed, it must be noted that in no case have we succeeded in completely arresting the heart's action by injecting chloroform into the larynx, and as the chloroform was injected in liquid form, it is plain that the

irritation was more intense than could be produced by the mere vapors of the anæsthetic. however concentrated; therefore, while it must be considered that it is possible for a reflex inhibitory arrest of the heart to occur during the inhalation, such an accident is extremely improbable, and we consider it practically certain that a heart so arrested could, a few seconds later escaping from the inhibitory control, recommence its beat. [See our Experiment 15 (Hare and Thornton).] It certainly has never been proved that chloroform can cause in the human subject permanent reflex inhibitory cardiac arrest, and as our experiments upon the dog have failed to cause arrest, we consider it very improbable that reflex cardiac arrest is ever produced in man by chloroform." To this we wish to add, unless the cardiac disease or condition is such as to be unable to withstand any shock whatever (Hare and Thornton).

"20. In Experiment 92 repeated injections of 20 minims of chloroform were made into the jugular vein, and its effect was not to paralyze the heart, but to produce anæsthesia and a gradual fall of blood-pressure, exactly as if the chloroform had been inhaled. In Experiment 72, after a considerable amount of ether had been injected into the jugular vein and a bounding condition of pulse had been produced, the effect of injecting chloroform into the jugulars was much greater and the fall of blood-pressure much more rapid and dangerous than is the case when chloroform alone was in-Granting, then, the truth of Ringer's jected. conclusions from experiments on the frog's heart (which have not been repeated and confirmed by the Commission), that chloroform has a gradual paralyzing effect upon the heart's tissue, we must conclude that such an effect, in the degree in which alone it could occur in the practical inhalation of chloroform, would rather be a source of safety than of danger. [With these conclusions we have to entirely disagree, and we cannot understand how results so completely at variance with our own and with those of Wood and Hare could have been arrived at. (See Tracings Nos. 19 and 20.) The tracings we present do not admit of wrong interpretation. Perhaps the difference lies in the fact that in our studies enough water was added to the chloroform to carry it en masse to the heart, whereas in the East Indian studies the pure undiluted drug was injected, and had not sufficient volume to reach the heart, and was gradually volatilized in the vein, and so produced a gradual effect. (This is shown in Tracing No. 8, Hare and Thornton.) We find the injection of from 2 to 4 cubic centimetres of chloroform into the jugular vein causes arrest of respiration, rapidly followed by cardiac arrest, which is not secondary to the respiratory failure, but to a primary action of the chloroform on the heart-muscle, which is found more responsive to stimulation. We have made this experiment over one hundred times.

It having been denied that chloroform, when injected into the jugular vein, causes cardiac depression, and the recent experiments of Leaf and his colleagues in Hyderabad having been cited to support this view, let us discuss the facts before us. In these researches they found when chloroform was given in excessive amount, that the pen fell to the abscissa line and failed to record a pulse-wave, but that a needle in the heart-muscle continued to beat for many seconds. While at first glance these results, which we have also obtained (see our Experiments 19 and 20), seem to prove that the cardiac arrest is only apparent and not real, in reality they have been given an importance far in excess of their value. We have proved again and again that the movement of the needle may be due, not to a true cardiac contraction, but to inco-ordinated contraction of one of the ventricles, and to contractile movements of bands of the cardiac muscle, which movements are very often rhythmical enough to make the needle beat regularly. We have found this needle movement taking place even after an injection of chloroform had been sent directly into the heart through the chest-wall, and in a heart the muscle of which failed to respond to any strength of faradic irritation. except in those parts which had not come in contact with the poison.

Further than this, if an animal be given very large doses of chloroform intravenously or by direct intracardiac injection, respiration invariably ceases if the amount be large enough, and if the chest be opened one condition will be constantly found,—viz., the heart so widely dilated as to fill the pericardium almost to bursting, and the cavities, particularly the ventricles, engorged with blood. Although they may still be feebly contracting, the contraction is abortive and fails to cause arterial If the drug has been used intravenously, by the jugular, the blood in the right and left heart will be found red, provided death has come on rapidly. If not, it will be dark and venous. The lungs will be found of that peculiar pink hue due to altered blood. If the injection has been cardiac, it will be found that the ventricle with which the poison has come in direct contact has become paralyzed, while the other is making fairly good efforts to work. (See our Experiment 21, Hare and Thornton.) When the injection takes place into the right ventricle, so that the poison passes to the left cavity, both ventricles fail to act voluntarily or to faradism. (See our Experiment 25, Hare and Thornton.) Chloroform is capable, therefore, of causing death of the cardiac muscle whenever it comes in contact with it, and that there is no possibility of this arrest being due to vagal irritation is proved by experiments in which vagal section preceded the use of the chloroform. (See our Experiments 22, 24, and 25.) We doubt whether the last sentence of paragraph 20 is justified by our present knowledge.]

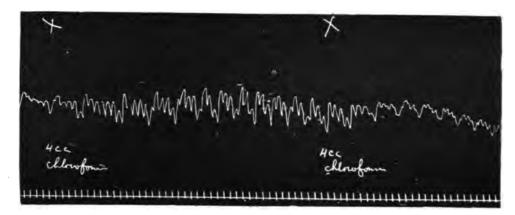
"21. The committee discussed the advisability of cutting the vagi some time previous to experimenting on the blood-pressure with chloroform. The effect of this procedure is to cause continuous rapid action and tendency to exhaustion of the heart, as well as to degeneration of the terminal branches of the nerves in the heart if the animal lives sufficiently long. Such experiments might be of some interest theoretically, and also have had a practical bearing upon the condition of the heart in certain cases of chronic alcoholism; but the committee decided not to perform them, as they considered the end to be gained did not justify the pain they would have inflicted. We have not made this particular experiment, but we found that vagal section immediately before the drug was used did not materially alter the result.]

"22. In Experiment 178, the case of a dog that had had morphine, remarkable slowing and even temporary cessation of the heart's action occurred again and again at the same moment as the respiration stopped, but the heart invariably recovered itself and began again to beat regularly before any steps were taken to restore the animal, and without any respiration occurring. We found in this case that it was possible to restore the animal even after unusually long intervals had been allowed to elapse between the cessation of natural and the commencement of artificial respiration. The failure of the heart, if such it can be called, instead of being a danger to the animal, proved to be a positive safeguard by preventing the absorption of the residual chloroform and its distribution through the system. We have not made any experiments on this point.]

"23. The effect of artificial respiration after the natural respiration has ceased is to cause an alternate rise and fall of small amount in the blood-pressure, the trace thus formed upon the drum being a coarse imitation—altered somewhat by the shaking of the table—of the nat-

### EXPERIMENT No. 1.

This tracing shows how the depression of pressure under chloroform is only temporary and followed by a rise if chloroform is stopped for a moment. Slight rise seen in Part III. It also shows how, if chloroform is pushed, respiration and circulation are hopelessly depressed, the respiration stopping first.



Dog, weight twenty kilos. Chloroform given on towel closely applied to head. Twelve cubic centimetres of chloroform given in the two minutes preceding the beginning of this tracing. Struggling from first inhalation very slight.

TRACING No. 1-Continued. PART II.



Without pause.

TRACING No. 1-Continued. PART III.

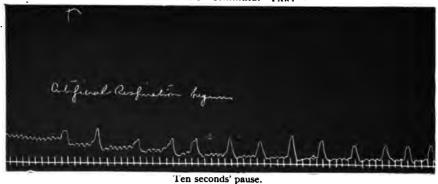


No pause. Shows slight rise of pressure.

TRACING No. 1-Continued. PART IV.



TRACING No. 1-Continued. PART V.

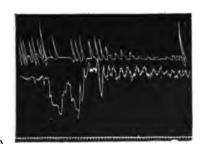


TRACING No. I-Continued. PART VI.

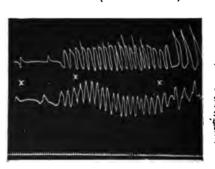
refer filitieristim fielletelletereterististeritad trattic.exiliciamon.

No pause.

TRACING No. 1 (Wood and Hare).

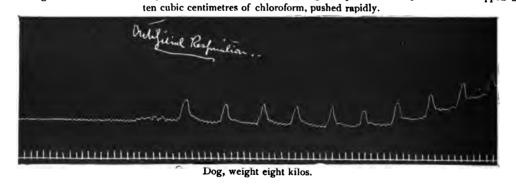


TRACING No. 2 (Wood and Hare).

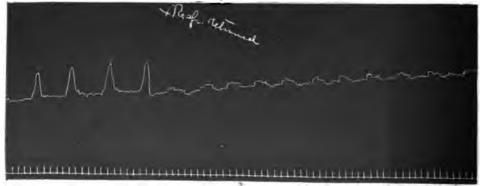


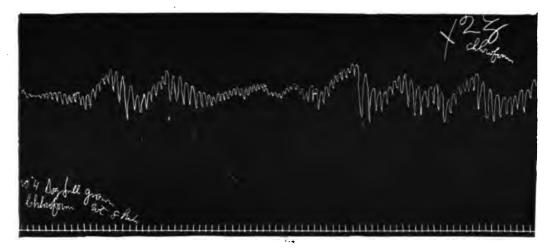
TRACING No. 3. PART I.

This tracing shows how artificial respiration causes a return of breathing and pressure. Respiration was stopped by



TRACING No. 3-Continued. PART II.





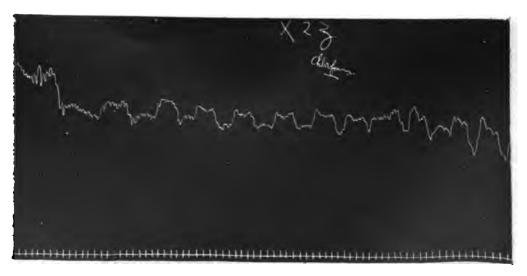
Shows that with anæsthesia there always ensues a fall of arterial pressure. There is also a gradual failure of heartforce, as seen particularly in Parts VII. and VIII. in this tracing.

TRACING No. 4-Continued. PART II.



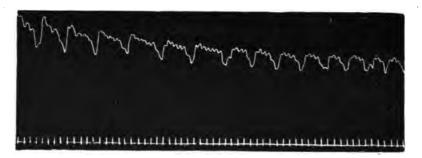
No pause.

TRACING No. 4-Continued. PART III.



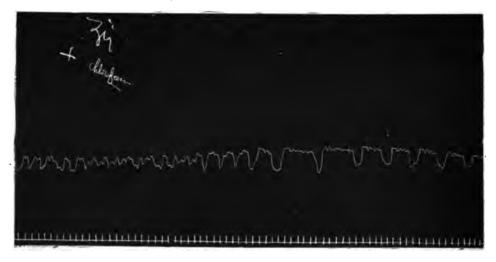
No pause.

TRACING No. 4-Continued. PART IV.



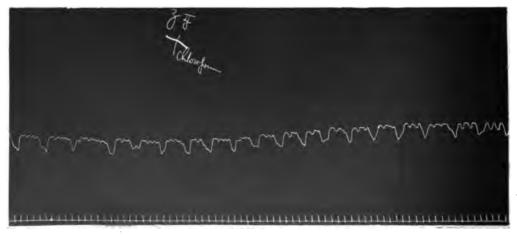
No pause.

TRACING No. 4-Continued. PART V.

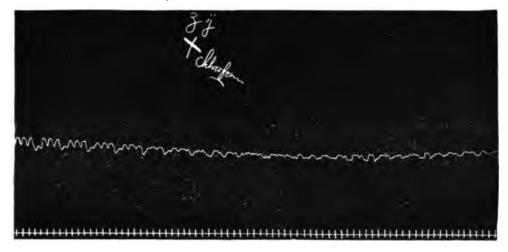


No pause.

TRACING No. 4-Continued. PART VI.

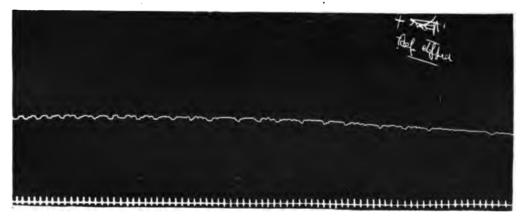


TRACING No. 4-Continued. PART VII.



No pause.

TRACING No. 4-Continued. PART VIII.



No pause.

TRACING No. 5. PART I.



Weight ten kilos. Chloroform given on Esmarch inhaler to the amount of twenty cubic centimetres in preceding ten minutes. Artificial respiration instituted as soon as voluntary respiration ceased at first  $\times$  mark; failed to restore respiration and to preserve circulation. See Part II. of this tracing.

TRACING No. 5-Continued. PART II.

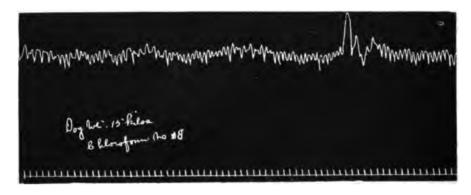


Respiration stopped at first × mark.

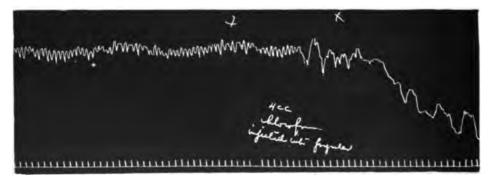
TRACING No. 5-Continued. PART III.

# 

TRACING No. 8. PART I.



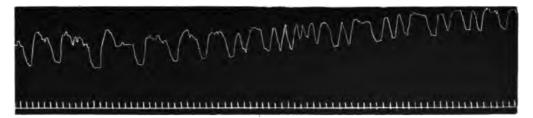
TRACING No. 8-Continued. PART II.



No pause.

TRACING No. 8-Continued. PART III.





Two m'nutes since l'art III.

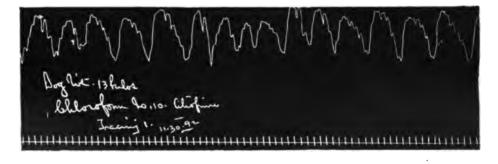
TRACING No. 8-Continued. PART V.



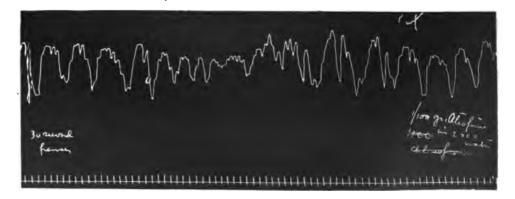
No pause.

TRACING NO. 10. PART I.

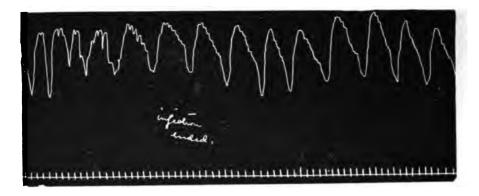
This tracing shows how, if chloroform is pressed, the respiration finally ceases, and the circulation is persistently de pressed; also, that atropine prevents a rapid fall of pressure.



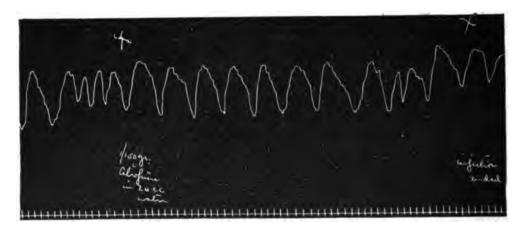
TRACING No. 10-Continued. PART II.



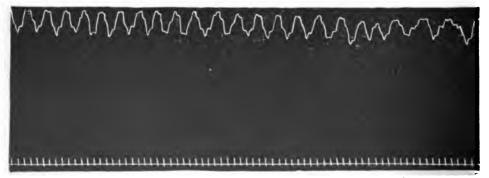
TRACERG TVO. 10-Continued. PART III.



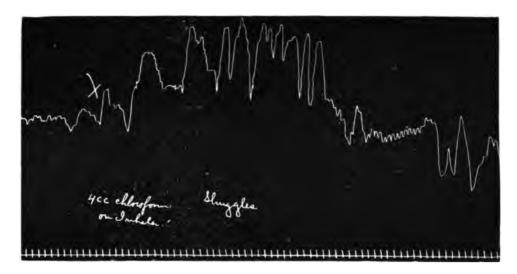
TRACING No. 10-Continued. PART IV.



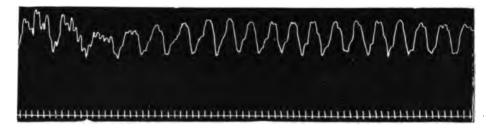
TRACING No. 10-Continued. PART V.



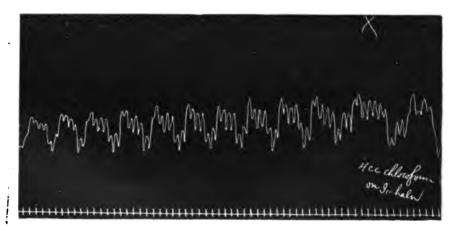
A pause of one and one-half minutes between this part and Part IV.



TRACING No. 10-Continued. PART VII.

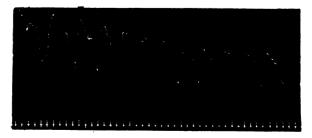


TRACING No. 10-Continued. PART VIII.



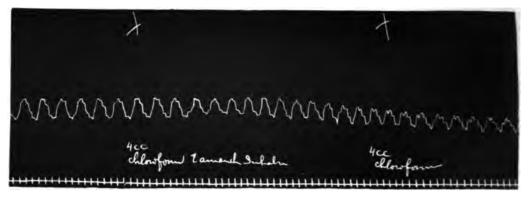
No pause.

TI ACING No. 10-Continued. PART IX.



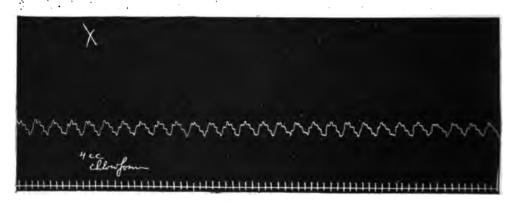
No pause.

TRACING No. 10-Continued. PART X.



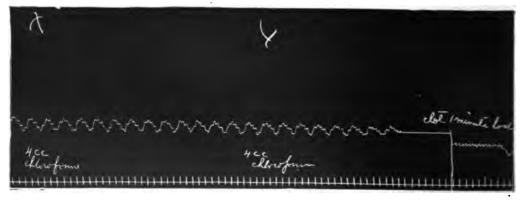
Two minutes' pause in changing drume

TRACING No. 10-Continued. PART XI.



No pause.

TRACING No. 10-Continued. PART XII.

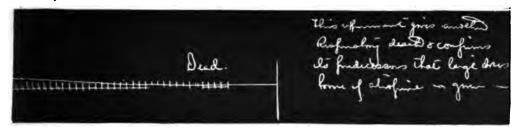


No pause.

TRACING No. 10-Continued. PART XIII.



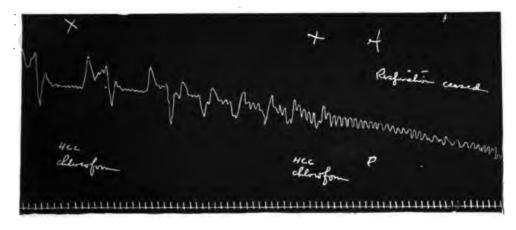
No pause.



No pause.

TRACING NO. 12. PART I.

This tracing shows how the pulse and respiration may apparently cease finally, yet return after some moments, and then fail again, the respiration stopping first, the heart finally being in good condition. See Part V.



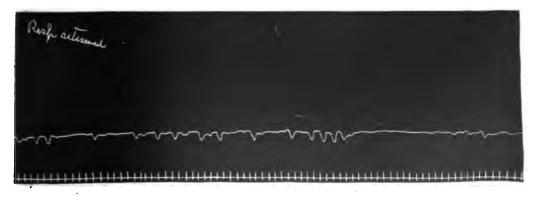
Dog, weight ten kilos. Four cubic centimetres of chloroform given thirty seconds before this tracing begins.

TRACING No. 12-Continued. PART II.



No pause.

TRACING No. 12-Continued. PART III.



No pause.



No pause.

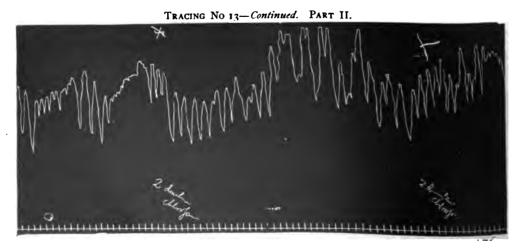
" TRACING NO. 12-Continued. PART V.



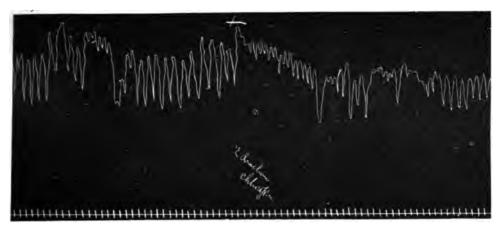
TRACING No. 13. PART I.

This tracing shows characteristic fall of blood-pressure under chloroform, the irregular pulse due to struggling, and the effect of primary irritation of the vagal and trigeminal nerves. It also shows how, when the arterial pressure and heart-action seem practically nil, recovery of both may occur, if the chloroform is not pushed. Also recovery of respiration voluntarily. (See Parts VI., VII., XI., and XIV. of this experiment.) Also shows how, when chloroform is pushed, there comes a time when respiration ceases finally and pressure falls very low. (See Parts XV. and XVI.) As usual, respiration ceased before heart.

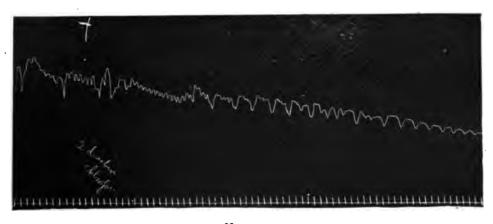




TRACING No. 13-Continued. PART III.



TRACING No. 13-Continued. PART IV.



No pause.

TRACING No. 13-Continued. PART V.

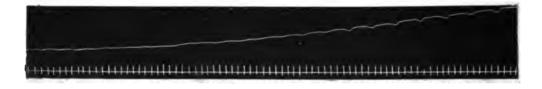


TRACING No. 13-Continued. PART VI.

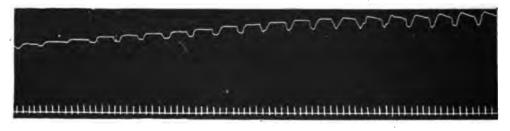


A pause of twenty seconds, owing to pen getting caught in thread. During this pause pen fell to point shown in very beginning of this tracing.

TRACING No. 13-Continued. PART VII.

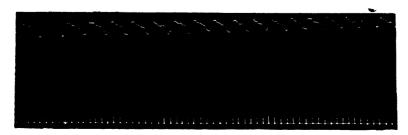


TRACING No. 13-Continued. PART VIII.



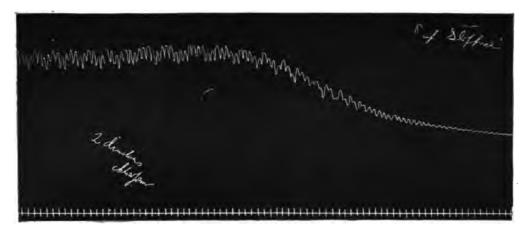
No pause.

TRACING No. 13-Continued. PART IX.



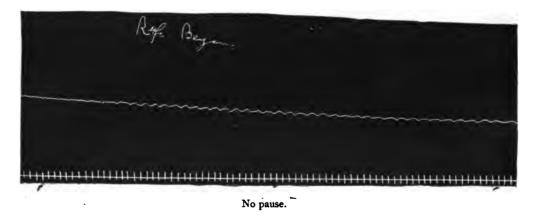
No pause.

TRACING No. 13-Continued. PART X.

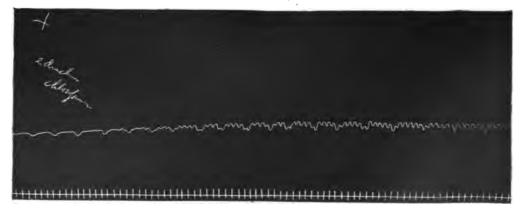


Beginning of another paper on second drum. About forty seconds lost in removing first drum and placing second drum in place. Shows complete restoration of blood-pressure.

TRACING No. 13-Continued. PART XI.

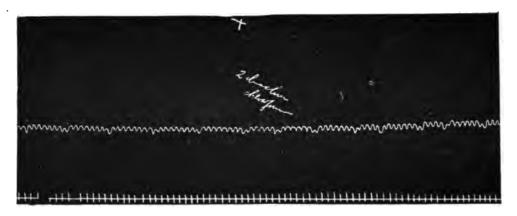


TRACING No. 13-Continued. PART XII.



No pause.

TRACING No. 13-Continued. PART XIII.



No pause.

TRACING No. 13-Continued. PART XIV.



No pause.

TRACING No. 13-Continued. PART XV.



No pause.

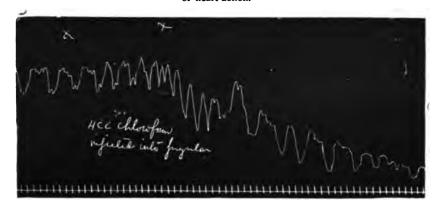
TRACING No. 13-Continued. PART XVI.



No pause.

TRACING No. 14. PART I.

This tracing shows that an animal apparently dead from cardiac failure caused by chloroform has a temporary return of heart-action.



Dog, weight six kilos. Four cubic centimetres of chloroform injected into jugular.

TRACING No. 14—Continued. PART II.



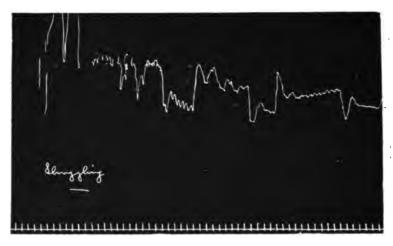
TRACING No. 14—Continued. PART III.



Thirty seconds' pause.
TRACING No. 15. PART I.



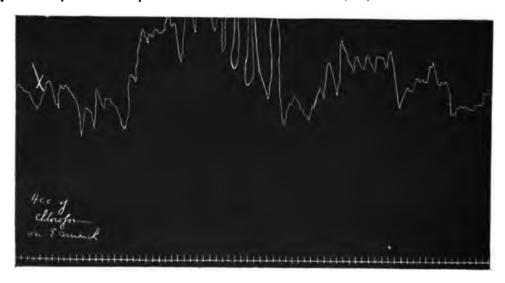
TRACING No. 15-Continued. PART II.



No pause.

TRACING NO. 16. PART I.

This tracing shows that chloroform, even when given very freely in four cubic centimetre doses, does not lower blood-pressure as rapidly when atropine is given as when it is not. It also shows how, when chloroform is pushed, the respiration finally ceases and the pressure falls lower and lower. See Parts X., XI., and XII.

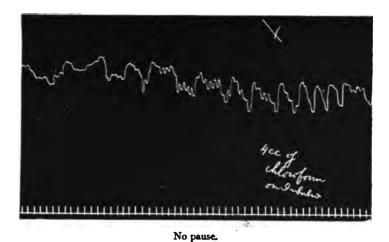


TRACING No. 16-Continued. PART II.

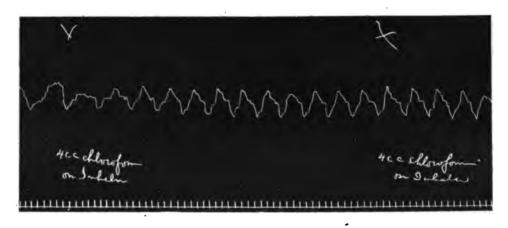


No pause.

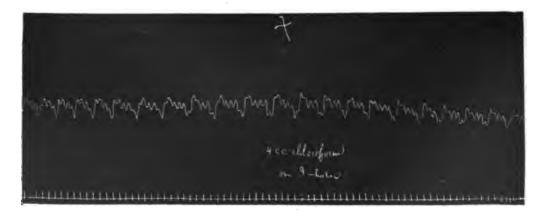
TRACING No. 16-Continued. PART III.



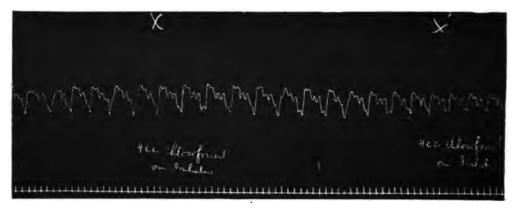
TRACING No. 16—Continued. PART IV.



TRACING No. 16-Continued. PART V.

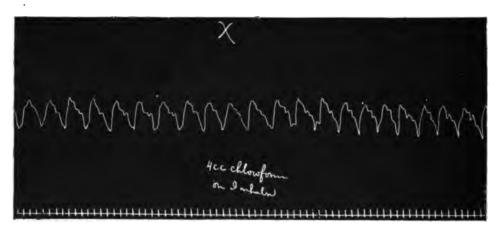


TRACING No. 16-Continued. PART VI.



No pause.

TRACING No. 16-Continued. PART VII.



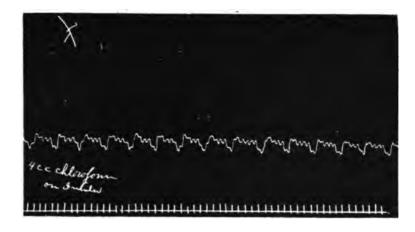
No pause.

TRACING No. 16-Continued. PART VIII.

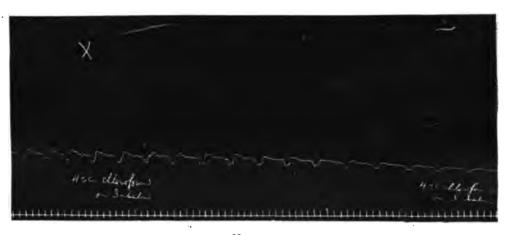


No pause.

TRACING No. 16-Continued. PART IX.



TRACING No. 16-Continued. PART X.



No pause.

TRACING No. 16-Continued. PART XI.



No pause.

TRACING No. 16-Continued. PART XII.

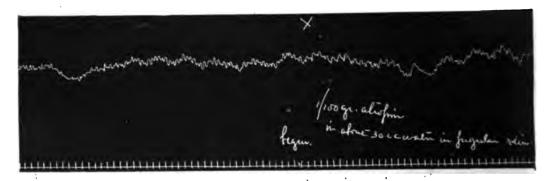


## TRACING No. 17. PART I.

This tracing shows how chloroform may so depress the circulation as to make one think the animal is dead, but the heart, if given time, regains its action. (See Parts IX., X., and XI.) It also shows how, if chloroform is pushed, the respiration stops and the pressure falls (see Parts XIII., XIV., XV., and XVI.), and that the respiration may begin spontaneously as the pressure rises. (See Parts X. and XIII.)

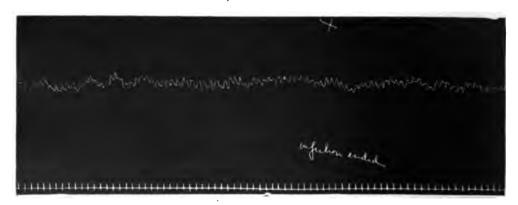


TRACING No. 17-Continued. PART II.



No pause.

TRACING No. 17-Continued. PART III.

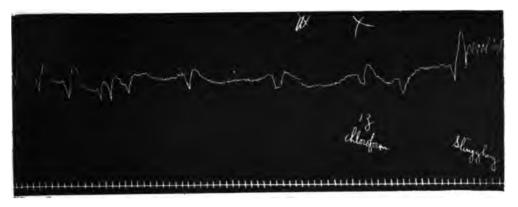


No pause.

TRACING No. 17-Continued. PART IV.

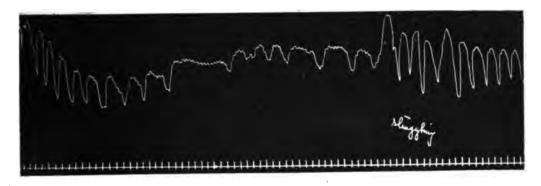


TRACING No. 17-Continued. PART V.



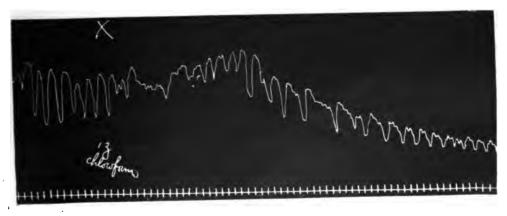
Pause of twenty seconds.

TRACING No. 17-Continued. PART VI.



No pause.

TRACING No. 17-Continued. PART VII.



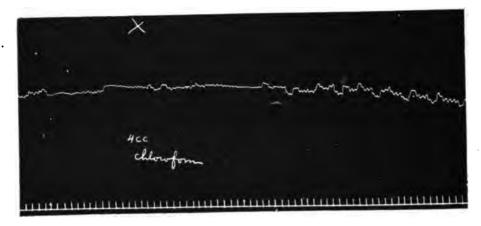
No pause.

TRACING No. 17-Continued. PART VIII.



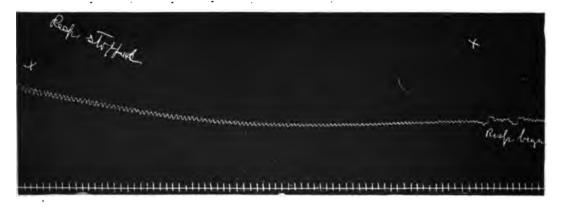


TRACING No. 17-Continued. PART X.

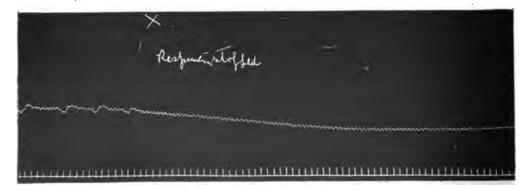


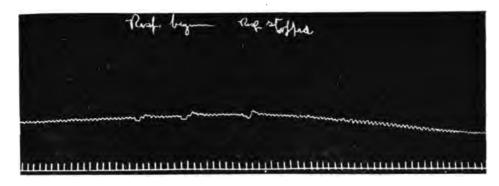
Four minutes lost in changing drum. During this time no chloroform was given. Tracing shows recovery of blood-pressure. Respiration returned during pause.

TRACING No. 17-Continued. PART XI.



TRACING No. 17—Continued. PART XII.





No pause.

TRACING No. 17-Continued. PART XIV.



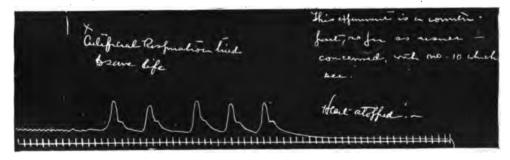
No pause.

TRACING No. 17-Continued. PART XV.



No pause.

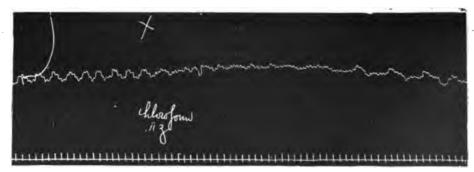
TRACING No. 17-Continued. PART XVI.



No pause.

TRACING No. 18. PART I.

This tracing shows very long circulatory maintenance when atropine is given. It also shows how, when chloroform is pushed, it finally causes arrest of respiration and fall of pressure.



Dog, weight seven kilos. This is beginning of second drum. During first drum (ten minutes) he had received  $\frac{1}{100}$  grain of atropine and two drachms (eight cubic centimetres) of chloroform every minute, or eighty cubic centimetres. As this first drum-tracing is a counterpart of No. 17, it is not given.



No pause.

TRACING No. 18-Continued. PART III.



No pause.

TRACING No. 18-Continued. PART IV.



No pause.

TRACING No. 18-Continued. PART V.

No pause.

TRACING No. 18-Continued. PART VI.

No pause.

TRACING No. 18-Continued. PART VII.

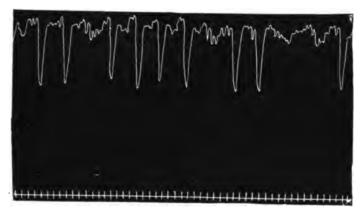
[Plate lost by maker of plates.—Showed no change except gradual fall of pressure.]

TRACING No. 18-Continued. PART IX.



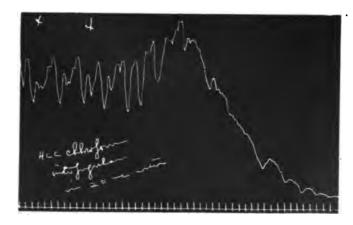
No pause.

TRACING No. 19. PART I.



Dog, weight twelve kilos. This shows tracing before chloroform was used.

TRACING No. 19-Continued. PART II.

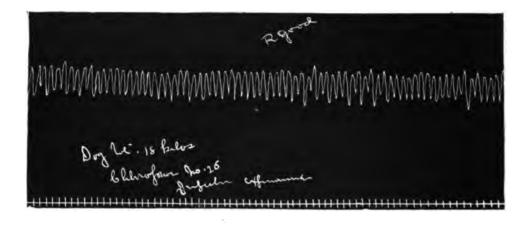


A pause of three minutes since last tracing to fix pen, which was out of order.

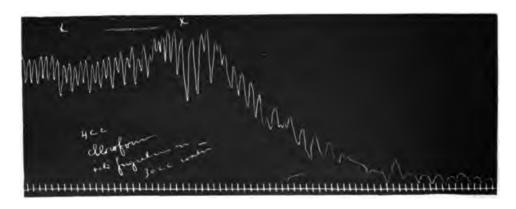
TRACING No. 19-Continued. PART III.



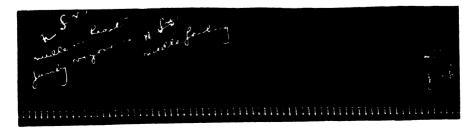
TRACING No. 20. PART I.

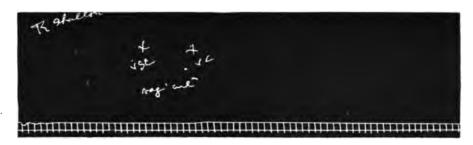


TRACING No. 20-Continued PART II.



TRACING No. 20-Continued. PART III.





No pause.

TRACING No. 20-Continued. PART V.



No pause.

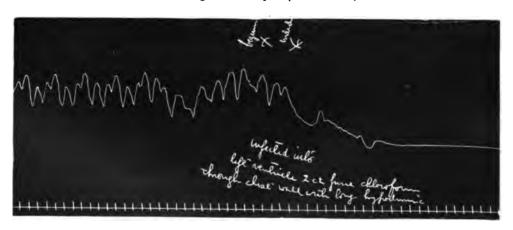
TRACING No. 20-Continued. PART VI.



No pause.

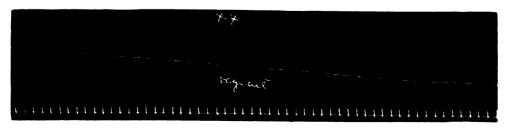
TRACING NO. 21. PART I.

This tracing shows arrest of heart by injecting chloroform into the left ventricle, and that the right continues to beat though the left stops. (See Part VII.)



Dog, weight twelve and a half kilos.

TRACING No. 21-Continued. PART II.



No pause.

No pause.	
Tracing No. 21—Continued. Part IV.	
111111111111111111111111111111111111111	
No pause.	
No pause.	
TRACING No. 21—Continued. PART V.	
No pause.	
TRACING No. 21—Continued. PART VI.	
TRACING NO. 21—Continued. TAKT VI.	
+	
No pause.	
TRACING No. 21—Continued. PART VII.	
He.	I

This efferment about the Refusion of Teaffre Total

fine file summellaments of the klowform is the state of the desired of the state of

tio expuner shine that when therefore impulse who the have I achi was a duct andre faily your his findent of fromme needle in life realifeant in TRACING No. 22—Continued. PART II. Vagi cut before chloroform was given. line from the 2.2

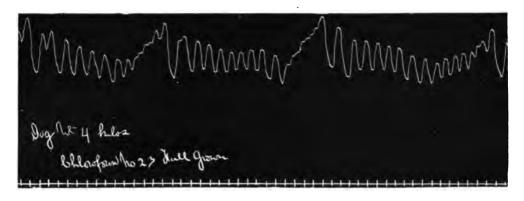
+		
ナーナナーナ	The former Good or evel	No pause.
		No pause.

TRACING No. 22—Continued. PART IV.

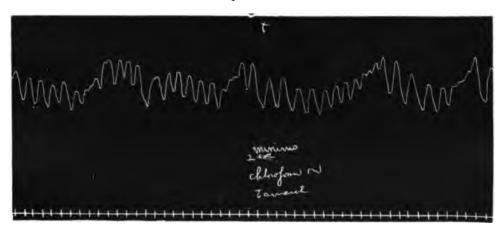
	Annual Langue and Langue	Accorded to the	The Court of a	Anester Com	Marsh raterily
of the land parkers	Diato due of amount & summer som	Jang way line	7		
(	GAN TO	A wint			
				1-	

TRACING No. 23. PART I.

This tracing shows how chloroform depresses the circulation, but that the pressure very soon rises as the animal frees itself from the drug. (See Part IX.) It also shows how, if chloroform is pushed, respiration ceases and the pressure falls. (See Parts XII., XIII., XIV., XV., and XVI.) See interesting rise of pressure in Parts XVII. and XVIII.

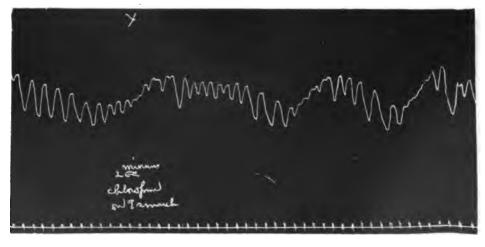


TRACING No. 23-Continued. PART II.

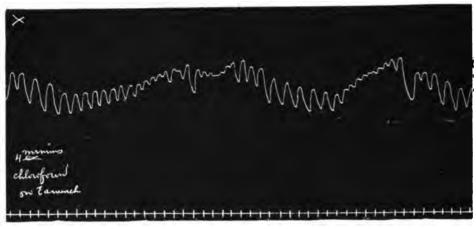


No pause.

TRACING No. 23-Continued. PART III.

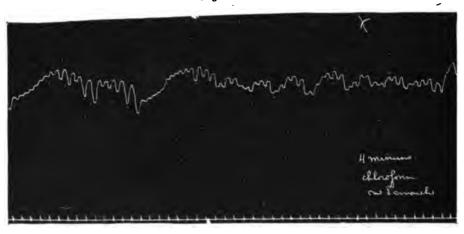


TRACING No. 23—Continued. PART IV.



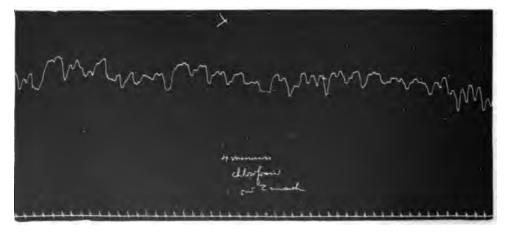
No pause.

TRACING No. 23-Continued. PART V.



No pause.

TRACING No. 23—Continued. PART VI.

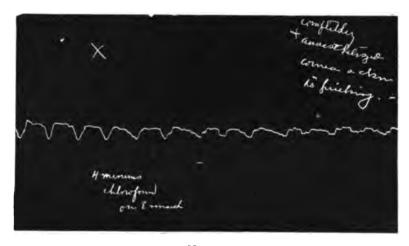


No pause.



No pause.

TRACING No. 23-Continued. PART VIII.



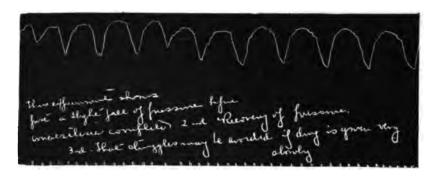
No pause.

TRACING No. 23-Continued. PART IX.



No pause.

TRACING No. 23-Continued. PART X.



No pause.

TRACING No. 23—Continued. PART XI.

[Tracing lost by maker of plates.]

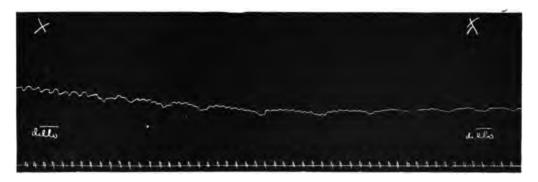
Chloroform given. Two minutes lost in changing drum.

TRACING No. 23-Continued. PART XII.



No pause.

TRACING No. 23-Continued. PART XIII.



No pause.

TRACING No. 23 - Continued. PART XIV.



No pause.

TRACING No. 23-Continued. PART XV.



No pause. Heart maintains same pressure in vessels, though very feeble and apparently stopped so far as pulse work is concerned.

TRACING No. 23—Continued. PART XVI.



No pause. This shows the same as Part XV.

TRACING NO. 23—Continued. PART XVII.

I wante this to be proved have at the forest

No pause.

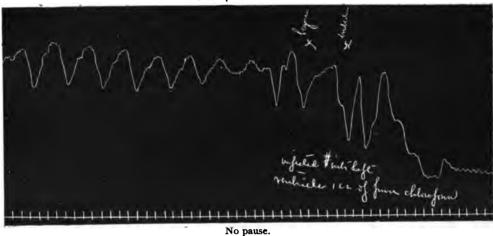
TRACING NO. 23-Continued. PART XVIII.

4			1 1 1
avien.	111 =		44444
Later of	minhes 4		1
In after to	EL po 20 2	,	
Summed wordy after this follow governor. It was that they are then to be the transmitter of	hat feelet for 20 minutes fee !!	Shank	44444
		ord what respective is the guidence your wastife in do not selve beard	
		waterer.	
		A year	4
٨		with goods	
		instanton.	
		Jak Das	1



Dog, weight six and a half kilos. Full-grown bitch. No chloroform until after vagal section.

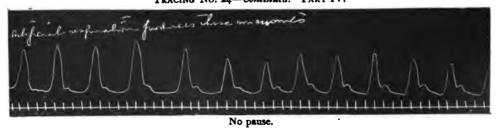
TRACING No. 24—Continued. PART II.



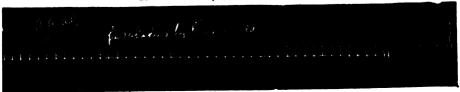
TRACING No. 24--Continued. PART III.



TRACING No. 24-Continued. PART IV.



TRACING No. 24-Continued. PART V.



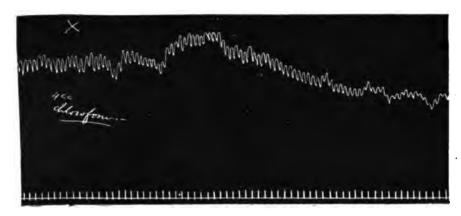
No pause.

racing shows how chloroform paralyzes the heart-muscles when it comes in direct contact with it after injection into right ventricle. (See Part II.) Also, that the heart stops independently of any ve Though the chase wall the gwither efforment the Albert Dog, weight eight and a half kilos. Vagi cut before chloroform used, TRACING No. 25-Continuea, PART II. TRACING NO. 25. PART I. have and baty feely. My Mayound My De Well

No pause,

TRACING No. 26. PART I.

This tracing shows slight fall of pressure, stoppage of respiration, and spontaneous renewal of respiration.



Dog, weight twenty pounds. Four cubic centimetres of chloroform given on towel tightly applied to head.

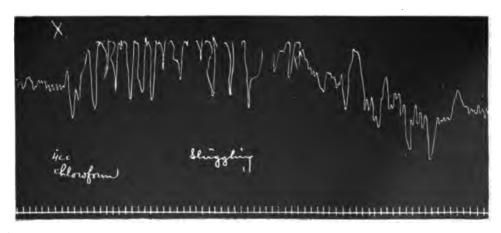
TRACING No. 26-Continued. PART II.



No pause.

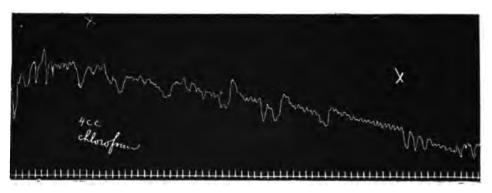
TRACING No. 27. PART I.

This tracing shows how artificial respiration, resorted to at the proper time, may result in recovery of respiration and circulation.



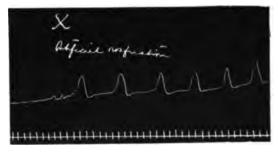
Dog, weight twenty kilos. Chloroform on towel tightly about head. Shows fall of blood-pressure. Arrest of respiration at × mark on next section of tracing.

TRACING No. 27-Continued. PART II.



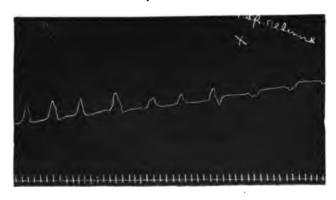
No pause. Respiration stopped at second × mark.

TRACING No. 27-Continued. PART III.



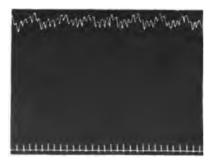
Ten seconds' pause.

TRACING No. 27-Continued. PART IV.



No pause.

TRACING No. 27-Continued. PART V.



Two minutes later.

ural respiratory curve. [We concur. (See our Experiments 3 and 27, Hare and Thornton.)] The difference consists chiefly in the fact that the artificial rise and fall is more abrupt than in normal breathing, and that the rise always coincides with expiration or compression of the chest. After artificial respiration has been continued for a certain time the blood-pressure begins to rise again, and a little later natural respiration returns. [We concur in this result.]

"24. The effect of artificial respiration in restoring an animal after the respiration had stopped was always marked. [See our Experiments 3 and 27 (Hare and Thornton). We therefore concur, as qualified by the next paragraph.] In a few exceptional cases, such as No. 159, a phosphorus dog, and No. 142, a horse which had an enormous overdose, although the artificial respiration was commenced as soon as possible after the breathing was noticed to have stopped, it was not successful.

"25. Complete stoppage of the respiration always means that an overdose has been administered, and the overdose may have been so great as to render restoration impossible. It is impossible to say whether, after chloroform has been pushed and then discontinued, the respiration will be restored spontaneously or not, and it is never in any case certain that artificial respiration will restore the natural respiration and blood-pressure, no matter how soon it is commenced after the respiration stops. [See our Experiments 1 and 5 (Hare and Thornton). A great deal depends upon the amount of the after-fall: in some cases, even after the respiration has been restored, the pressure continues to fall and respiration again ceases, and artificial respiration then fails. We thus find respiration restored by artificial respiration while chloroform is still being absorbed, and this tends to show that artificial respiration does not merely pump the chloroform out of the blood, but exerts considerable influence in exciting the natural respiration.

"26. The time which elapses before artificial respiration succeeds in restoring natural respiration varies very greatly. In one case (No. 116) it was continued for eleven minutes before the first natural gasps commenced. This period is undoubtedly prolonged in some cases by a condition of physiological apnœa which renders it unnecessary for the animal to breathe. Consequently, whenever the pressure rose considerably during artificial respiration, it was stopped, and the animal then generally breathed after a few seconds. [Whenever apnœa developed, the fall of pressure would

persist and a rise not take place (Hare and Thornton).]

"27. The time which may be allowed to pass with impunity before commencing artificial respiration also seems to vary considerably. This point was not particularly attended to in the manometer experiments 162 and 178, which were instituted to test the truth of the opinion formed by the sub-committee, that morphine had some slight action in impairing the efficiency of artificial respiration. In these cases the commencement of artificial respiration was postponed for more than two minutes after respiration ceased, and was successful; but this is certainly far above the average interval that can be allowed with safety. success of artificial respiration in restoring the blood-pressure is, in some cases, very remarkable. In Experiment 40 the heart had apparently ceased beating, and the dog was believed by every one present to be dead, and yet recovered with artificial respiration. The success in this instance is due to the fact that concentrated chloroform had been pushed for two minutes, regardless of the breathing, and the stoppage of the heart was due to stimulation of the vagus through asphyxia. The animal was therefore easily restored, as he was suffering more from asphyxia than from chloroformpoisoning.

"28. It corresponds to those cases, which are so often reported, in which dangerous failure of the heart is said to have occurred some minutes after the administration of chloroform had been discontinued, and which are sometimes restored, and sometimes not, by artificial respiration. There is nothing at all sudden about the failure of the heart in these cases, but the attention of the chloroformist, which has been wandering, is suddenly called to the fact that the patient is apparently dead. When the animal was really dead, it was found in some cases that artificial respiration still maintained a small amount of mean pressure in the manometer. In others the pressure seemed to fall to the zero line between each compression of the chest. [We reach a similar conclusion.]

"29. The dangers of too vigorous artificial respiration were illustrated in some of the accidental deaths. In one case the liver was badly ruptured, and in another the pleural cavity was full of blood. In three cases (Nos. 80, 92, and 103) rhythmical movements of the diaphragm were noticed after the heart had ceased beating and after the chest had been opened. It is remarkable that in two of these cases the splanchnic nerve had been divided. The third

was a case in which chloroform had been injected into the jugular, and in this case there was a synchronous movement of the jaw as well. In all, death and stoppage of the heart had occurred gradually, and in No. 103 the heart was still irritable. These movements cannot be called respiration, though the last gasp of a dying animal—that ineffective jerk of the diaphragm which is such a fatal symptom-is very likely in many cases a movement of the same character. Similar movements. which were continued much longer, occurred in Experiment 104, after the thorax was opened, while the heart was still beating. Still more remarkable convulsions of the muscles of the jaws, ears, and forefeet occurred in Experiment 167, in the case of a dog that had been poisoned with nicotine. These movements continued at regular intervals for more than ten minutes after death, and were sufficiently forcible to jerk the handles of a pressure forceps fixed on the end of the tongue off the table at each spasm. In a rabbit in Experiment 153 the auricles of the heart continued to beat rhythmically for three hours after it was supposed to be dead from chloroform and its thorax had been laid open. Irritability of the heart after death was noticed in many cases, but seemed to be most marked in cases where ether had been used. [We have made no studies in regard to this point.]

"30. Chloroform injected into the heart through the jugular vein did not cause clotting of the blood, as was the case when ether was injected. [Chloroform did cause clotting in our experiments (Hare and Thornton).]

"31. In the course of the experiments of the committee various drugs were administered, in order to ascertain if they had any effect in modifying the action of chloroform. sult showed that none of them had any effect in preventing the typical descent of the bloodpressure that occurs when chloroform is inhaled. Atropine, when given in a dose sufficient to paralyze the vagi, of course prevents the action of those nerves in asphyxia, and, by increasing the action of the heart, it appears to cause a more rapid descent in the bloodpressure when chloroform is inhaled, as has been already explained. [We cannot agree to this. (See our Experiments 10, 16, 17, and 18, Hare and Thornton.)] Morphine appeared in Experiment 162 to render the rise in bloodpressure that occurred when the chloroform was discontinued slower and less complete and to bring about a more or less permanent condition of anæsthesia. It may be noted that the animal used in this experiment was a monkey,

and in other experiments with monkeys, when no morphine had been given, it was remarked that the animal, after a few inhalations of chloroform, would often lie quite quiet, in a state of semi-sensibility, for a long time without further inhalations; still, this condition was much more marked in Experiment 162 than in any of the No action of this kind was noticed in the dog (Experiment 178); but other experiments (Nos. 90 and 94) showed that pariah dogs are very indifferent to the action of morphine, and it is probable that the dose of morphine in this case was insufficient to bring about the condition noted in the monkey. The peculiar behavior of the heart in Experiment 178 was not the result of the previous administration of morphine, for a similar phenomenon had occurred in other cases (49 and 60) in which no morphine had been given. Experiments 162 and 178 prove conclusively that morphine has no effect in shortening the period that may be allowed to elapse between the cessation of natural respiration and the commencement of artificial respiration. [We have already shown in Nos. 10, 16, 17, and 18 of our experiments that atropine seems to produce a very gradual fall of pressure and to preserve the circulation. With the other drugs we have not experimented (Hare and Thornton).]

"32. The other drugs used had no effect upon the action of chloroform, except when their own special action became the leading feature in the case, as, for instance, during the vomiting from apomorphine (Experiment 104, Fick, No. 9) or the convulsions produced by nicotine (Experiment 167).

"33. In order to test the alleged danger from shock during chloroform administration, the committee performed a very large number of those operations which are reputed to be particularly dangerous in this connection, such as extractions of teeth, evulsion of nails, section of the muscles of the eye, snipping of the skin of the anus, etc. In many cases the operation was performed when the animal was merely stupefied by the chloroform and not fully insensible. In such cases a slight variation in the blood-pressure would sometimes occur, such as one would expect from the irritation of a sensory nerve or from the struggling that ensued, but in no case in any stage of anæsthesia was there anything even suggestive of syncope or failure of the heart's action. In thrusting a needle into the heart there was often a momentary but well-marked fall of blood-pressure, but even this was absent in all other injuries. chloroform really has any power to increase the tendency to shock in operation, it is impossible to believe that it would not have been manifested to some degree at least in one or other of these numerous experiments. Commission was, however, not content with this negative result, and determined to ascertain the effect of direct irritation of the vagi during continued chloroform administration. The result of such experiments (Nos. 65, 117, and others) proved that inhibition of the heart's action prevented rather than assisted the fatal effects of prolonged chloroform inhalation. An animal that was put into a condition of extreme danger (from which it could only be restored by means of artificial respiration) by inhalation of chloroform for one minute, recovered spontaneously and readily after five minutes of chloroform, together with inhibition of the heart, by electrical irritation of the vagus carried on simultaneously. In one of these experiments (No. 117) chloroform was pushed for seven minutes; and during continued irritation of the vagus the animals repeatedly came round without artificial respira-The danger really begins when the irritation is discontinued or fails to inhibit the heart, and thus enables the chloroform in the lungs to be rapidly absorbed and thrown into the blood by means of artificial respiration; for animals in which this was done, although they showed a tendency to recover when the chloroform and irritation of the vagus were discontinued, afterwards died rapidly.

"34. On another occasion, during Experiment 117, the animal was very nearly killed by a comparatively short inhalation of chloroform, owing to the electrodes becoming accidentally short-circuited and failing to keep up the irritation of the vagus. Something similar occurred in Experiment 177, the effect of the irritation of the vagus passing off while the chloroform was still being pushed, and thus putting the animal into a condition of extreme and unexpected jeopardy. Nothing could be more striking than these near approaches to accidental death from failure to irritate the vagus efficiently.

"35. Other experiments were made to test the truth of the statement that chloroform increases the action of electrical stimuli applied to the vagus, and showed conclusively that it has no such effect. In one instance only the inhibition seemed to be intensified as the chloroform was commenced and diminished when it was discontinued; but apart from the fact that the supposed effect ceased much too suddenly, a repetition of the experiment on the same and other animals showed that there was in reality no such effect. The increased inhibition in

this instance was due to the chloroformist compelling the attendant who was holding the electrodes to change his position, and thus making him unconsciously apply them more efficiently. When the chloroformist withdrew they were restored to their former position. This affords an instance of the care that has to be taken in making experiments if one is not to be deceived.

"36. To test the effect of shock due to vasomotor change rather than affection of the heart. Goltz's experiment on the frog was repeated on three dogs. In one there was slight lowering of pressure, which was not extensive, but in the others no effect was produced at all. Other operations which seemed likely to produce shock, such as violent blows upon the testicle, were singularly devoid of effect. Failing to lower the blood-pressure by any of these methods, recourse was had to section of the splanchnics, but the low condition of bloodpressure this produced appeared, like stoppage of the heart from vagus irritation, to be a source of safety rather than of danger during chloroform administration. In this connection Experiment 111 may be studied. There was not much external hemorrhage, but the splanchnics were divided,—a proceeding which, as is often said, bleeds the animal into his own ves-The pressure was after this extremely low, but chloroform was repeatedly given and various other actions taken, and then chloroform had to be pushed on a saturated sponge inclosed in a cap for eleven minutes before respiration ceased.

"37. The experiments on dogs that had been dosed with phosphorus for a few days previously show that the fatty, and consequently feeble, condition of the heart and other organs so produced has no effect in modifying the action of chloroform. The ease with which vagus irritation and the Glasgow trace could be produced in these animals, by even slight degrees of asphyxia (vide Experiment 148), was very remarkable; but this was equally the case in dogs that had been given phosphorus only a few hours before the experiment, and whose organs were not yet fatty (vide Experiment 156). Many of these cases were in the last stage of phosphorus-poisoning, and several of their companions died without any experiment having been performed on them, before or on the same day as they did (vide the low state of blood-pressure in Experiment 163). [We have no experience to offer (Hare and Thornton).] Numerous attempts were made in these animals to produce shock by operations in the recumbent and vertical positions, but without any result more than in those that were healthy.

"38. The truth about the fatty heart appears to be that chloroform per se in no way endangers such a heart; but, on the contrary, by lowering the blood-pressure, lessens the work that the heart has to perform, which is a positive advantage. But the mere inhalation of chloroform is only a part of the process of the administration in practice. A patient with an extremely fatty heart may die from the mere exertion of getting upon the operating-table, just as he may die in mounting the steps in front of his own hall-door, or from fright at the mere idea of having chloroform or of undergoing an operation, or during his involuntary struggles. Such patients must inevitably die occasionally during chloroform administration, and would do so even were attar of roses or any other harmless vapor substituted for chloroform."

[We agree entirely with this statement; but as chloroform has confessedly some cardiac action and a very positive vaso-motor and respiratory effect, the fatal result might be more direct.]

#### SUMMARY.

Having given the evidence we have accumulated, let us see what practical deductions may be drawn.

From a careful study of the experiments so far reported, from studies made by one of us some two years ago with H. C. Wood, and, finally, from the careful series of experiments (the tracings of which we herewith append), we believe that the question can be settled by the acceptance of both views in a modified form, or, in other words, that there is no real antagonism in the beliefs that chloroform kills by depression of the heart or depression of the respiration.

We very positively assert that chloroform practically always kills by failure of respiration when administered by inhalation, provided—and this provision is most important—that the heart of the anæsthetized is healthy and has not been rendered functionally incompetent by fright or violent struggles, or, again, by marked asphyxia. By a healthy heart we mean one which has not undergone true fatty degeneration, or has not so severe a valvular lesion as to make the slightest variation in the even tenor of the circulation fatal.

As positively as we assert that chloroform kills primarily by respiratory failure, so do we also assert that in excessive dose by inhalation it has a depressant effect on the circulation, which is chiefly due to centric vaso-motor de-

pression, with final depression of the cardiac muscle itself. Depression of the cardiac muscle alone is never great enough to cause death when the chloroform is given by inhalation. but we believe that gradual asphyxia, with the direct depression of the circulation, may do much towards producing a fatal result, for vaso-motor integrity is almost as necessary to life as an intact cardiac mechanism. culatory depression has been considered a safeguard because it was supposed to prevent chloroform going to the vital centres; but in reality it is no safeguard, because profound circulatory depression is as great an evil as respiratory narcosis. That the circulatory depression may be dangerous is not only evident, but it is stated to be so by the second Hyderabad Commission itself at the end of paragraph 8. This circulatory depression may be so profound that recovery is impossible even with the most thorough artificial respiration, a fact stated by the second Hyderabad Commission in paragraph 25, which we quote in this paper. This emphasizes the fact that we cannot afford to totally ignore the effect of chloroform on the circulation, and we cannot consider the patient in danger of circulatory failure only when the respiration ceases, BUT AS SOON AS IT BECOMES ABNORMAL. On the other hand, we should remember that, even if chloroform has been given properly, the arterial pressure may be so low as to give no pulse in the radial artery, and yet the circulatory system be ready to respond at once when the drug is removed. If, therefore, the chloroform is properly administered, is there danger of its circulatory effect in man? We think that it is just at this point that our research, and every other research on animals, fails, and necessarily fails, to produce a positive The variation in the action of a drug on a diseased individual from its effect on the normal one is notorious, and we have no right to dogmatically assert that there is absolutely no danger of circulatory depression in man, even if we found no evidence of failure in dogs, because there may be many idiosyncrasies or variations, through disease in the human being, which may completely reverse the results of experiments on healthy animals.

In other words, supposing that the amount of depression from very full doses of chloroform equals 25 units, this amounts to little in the normal heart; but if the heart be depressed 25 additional units by disease, the depression of 50 units may be fatal, particularly if to this 50 is added 25 units more of depression through fright and cardiac engorgement, through disordered respiration or struggling. That true

depression of the heart-muscle may take place under chloroform seems to us most undoubted, and we think that the tracings in every research that we have seen support this view. There is always a decrease in cardiac power manifested by the decrease in the force of the individual pulse-beat, and this passes away only if chloroform is removed early enough. We also agree with McWilliams that from the very first inhalation of chloroform there is a constant tendency to cardiac dilatation.

We come, finally, to the all-important questions:

- 1. Is chloroform a safe anæsthetic?
- 2. Are we to watch the pulse or respiration during the use of the drug, and what are the signs in the respiratory function indicative of danger to the patient?
- 3. What is the true cause of death from chloroform?
- 4. Is death from chloroform possible when it is properly administered?
- 5. Under what circumstances is the surgeon to use chloroform in preference to the less dangerous anæsthetic ether?
- 6. What is the best way of administering chloroform?

To the first question the answer is, Yes, for the majority of cases, provided it is given by one who is skilled in its use, and not only knows how to give it, but to detect signs of danger. It is not so safe as ether at any time, other things being equal, and never so safe in the hands of a tyro.

To the second question the answer is, Watch the respiration, because as soon as enough chloroform is used to endanger the circulation, the respiration will show some signs of abnormality, either in depth, shallowness, or irregularity. In other words, the very effect of the drug may be to cause such deep and rapid respirations that an excessive quantity of the drug is taken into the lungs and continues to be absorbed even after the inhaler is withdrawn.

As there is always a fall in pressure under chloroform, it is difficult to feel the radial or temporal pulse, and the respiratory centre recognizes the degree of arterial depression which its sister vaso-motor centre has permitted by finding that its blood-supply is insufficient. As respiration fails first, it should be watched first. Finally, it is only by watching the respiration that we can tell how much chloroform the patient is getting. We do not watch this function for danger alone, but to tell us of the dose.

The answer to Question 3 is that death is always due in the healthy animal to respiratory

failure accompanied by circulatory depression, which latter may be severe enough to cause death, even if artificial respiration is used skilfully. Death only occurs in the healthy animal when chloroform is given in excessive quantities.

Question 4 is impossible to answer for man from the basis of experimentation, as we cannot produce identical diseased states in animals with those developed under various conditions in man. The physician having a case of heart-disease should always advise the patient of the danger of any anæsthetic, and he should remember, whether it is wise to tell the patient or not, that anæsthesia always means a step towards death, even in the healthiest of men. In the event of a death under chloroform, the physician is not to blame if he has taken proper preliminary precautions and given the chloroform properly.

Every one is agreed that the patient taking chloroform should have plenty of fresh air, and in India we understand that, to all intents and purposes, patients are operated on in the open air, at least as compared to the closed rooms necessary in America and Europe. This free supply of air is important, whether we believe death to be imminent from cardiac or respiratory failure; but this supply of air matters little to the patient if he does not breathe freely, nor does the dose of chloroform amount to aught if it is not drawn into the chest. The dose of chloroform is not the amount on the inhaler, but the amount taken into the chest, and, finally, the amount absorbed by the bloodvessels. The rapidity and depth of respiratory movements is, therefore, as Lawrie asserts, the entire key to the situation. We watch a windmill over a well to see if it is pumping into a reservoir a given quantity of water. If the windmill works irregularly, so that we know its pumping action is deranged, we separate it from the pump until it works steadily. Similarly we withdraw chloroform, as Lawrie says, whenever respiration becomes disturbed in rhythm or when struggling disturbs it, because it is the first indication that the drug's action is uncertain, and because there is no telling the dose which is absorbed. While watching the respiration will not warn us of a sudden cardiac arrest in fatty heart plus chloroform depression, neither will the pulse give us such warning, and we are confident that the statement of the Hyderabad Commission, that the respiration should be watched, is correct, for we believe, from a long series of observations, that gradual cardiac failure never occurs without producing respiratory changes from the

very first. In other words, we do not believe that in a healthy heart chloroform can cause serious disorder without, as a result of beginning disorder, disturbing respiration; and, second, that in a healthy heart a quantity of chloroform sufficient to disorder it will by its direct action disorder the respiration. If, as an extra precaution, one assistant watches the pulse while the other watches the respiration, very well, for though the respiration is the more important function to watch, the man watching the pulse might discover an irregularity which the anæsthetizer may not see reproduced in the respiratory action; but as divided attention generally means a slighting of both objects in view, Lawrie is right in insisting on the pulse being let alone.

In answer to Question 5 we have several points to offer:

- r. Hot climates (where ether is inapplicable), where a free circulation of air increases the safety of the patient.
- 2. Chloroform may be used whenever a large number of persons are to be rapidly anæsthetized, so that the surgeon may pass on to others and save a majority of lives, even if the drug endangers a few, as on the battle-field, where only a small bulk of anæsthetics can be carried
- 3. Its employment is indicated in cases of Bright's disease requiring the surgeon's attention, owing to the fact that anæsthesia may be obtained with so little chloroform that the kidneys are not irritated, whereas ether, because of the large quantity necessarily used, would irritate these organs. Quantity for quantity, ether is, of course, the less irritant of the two.
- 4. In cases of aneurism, or great atheroma of the blood-vessels, where the shock of an operation without anæsthesia would be a greater danger than the use of an anæsthetic, chloroform is to be employed, since the greater struggles caused by ether and the stimulating effect which it has on the circulation and blood-pressure might cause vascular rupture.
- 5. In children or adults who already have bronchitis, or who are known to bear ether badly, or, in other words, have an idiosyncrasy to that drug, chloroform may be employed.
- 6. Persons who struggle violently, and who are robust and strong, are in greater danger from the use of chloroform than the sickly and weak, probably because the struggles strain the heart and tend to dilate its walls.

The safest method of administration is by Lawrie's or Esmarch's inhaler, because these provide free circulation of air and do not distract the attention of the anæsthetizer from the respiratory movement by complicated apparatus. Apparatus much like these, in allowing a free amount of air, are the Hyderabad chloroform inhaler or open-ended cone, with Krohne's and Seseman's respiration indicator attachment.

The Junker inhaler, even with its modifications, is too complicated and cumbersome, and while less chloroform is wasted in administering the drug, it must all be thrown out of the bottle afterwards. If used at all, it should be used with the increased air-supply and respiration indicator of Krohne and Seseman.

We agree so heartily with Lawrie's personal conclusions that we print them below:

- r. The chloroform should be given on absorbent cotton, stitched in an open cone or cap. (A depression made through the opening in the inside flannel bag will answer as well.)
- 2. To insure regular breathing, the patient, lying down, with everything loose about the neck, heart, and abdomen, should be made to blow into the cone, held at a little distance from the face. The right distance throughout the inhalation is the nearest which does not cause struggling or choking or holding of the breath. Provided no choking or holding of the breath occurs, the cap should gradually be brought nearer to, and eventually may be held close over, the mouth and nose as insensibility deepens.
- 3. The administrator's sole object while producing anæsthesia is to keep the breathing regular. As long as the breathing is regular, and the patient is not compelled to gasp in chloroform at an abnormal rate, there is absolutely no danger whatever in pushing the anæsthetic till full anæsthesia is produced.
- 4. Irregularity of the breathing is generally caused by insufficient air, which makes the patient struggle or choke or hold his breath. There is little or no tendency to either of these untoward events if sufficient air is given with the chloroform. If they do occur, the cap must be removed, and the patient must be allowed to take a breath of fresh air before the administration is proceeded with.
- 5. Full anæsthesia is estimated by insensitiveness of the cornea. It is also indicated by stertorous breathing or by complete relaxation of the muscles. Directly the cornea becomes insensitive or the breathing becomes stertorous, the inhalation should be stopped. The breathing may become stertorous while the cornea is still sensitive. The rule to stop the inhalation should, notwithstanding, be rigidly enforced,

and it will be found that the cornea always becomes insensitive within a few seconds afterwards.

It is only necessary to add that the patient should be so dressed for an operation that his respiratory movements can be easily seen by the chloroformist. In the climate of India this is not difficult to manage, but it is rather more so in the climate of Europe; so that in this respect, and in this respect alone, the chloroformist in England is placed at a distinct disadvantage compared with the chloroformist in India.

Note.—Since writing this report two important papers upon this subject have appeared in the London Lancet,—the one by Gaskell and Shore, in which they carried out a complete line of ingenious cross-circulation experiments, and from which they conclude that the fall in bloodpressure seen under chloroform is due to cardiac rather than vaso-motor depression; and another paper, published by Lawrie, in the London Lancet for February 11, 1893, in which he refutes the statements made by Gaskell and Shore, and details experiments which he believes combat those of the two investigators just named.

We cannot help believing that cross-circulation experiments in regard to the action of chloroform must be received with considerable doubt by the practising physician. Even if such work is carried out with the greatest skill, the opportunities for error are innumerable; and while results are obtained which, if in accord with other studies, might be accepted as confirmatory, the fact that they differ makes their negative conclusion of little value.

The object of the investigator of the action of chloroform is to perform experiments which, so far as possible, will be counterparts of the employment of the drug for human beings.

To the physiologist it is important to study a drug in order that certain results may be obtained, whether they have practical bearing or not; but the practising physician only wishes those points which should guide him in the administration of the remedy.

The concluding paragraph of Lawrie's latest contribution to the subject states the facts so clearly, and is so in accord with what we have tried to set forth in our own report, that we cannot do better than quote the paragraph:

"The Hyderabad Commission's work proves that, while Syme's principles are right, there is no such thing as a safe method of chloroform administration. It is no longer a question of the superiority of the London method or of the Edinburgh method; absolute safety can be attained neither by watching the respiration nor the pulse for signs of danger, which are in either case proof of improper administration or of overdosing. Moreover, overdosing may take place whether the anæsthetic is given on lint or on a towel or on a cap such as we use, or with Junker's or Skinner's or any other form of apparatus. The all-important point is that the breathing shall never be interfered with in any way. Safety under chloroform can unquestionably be insured, but it can only be so by attending to regular natural breathing; and whatever method is employed, no one can deny that it is the bounden duty of the chloroformist to maintain natural breathing throughout the whole period of administration. maintain natural breathing requires careful training and considerable experience; but if these conditions be fulfilled it is impossible to produce anything with chloroform but anæsthesia, and the Hyderabad Commission has shown that anæsthesia alone is entirely free from risk."\*

In reply to a general request for reports of cases of accident under chloroform, we received the answers shown in the appended table, which may be summarized as follows:

Number of respiratory failures	29
Number reported unable to feel pulse,	-
while respiration continued	4
Number of simultaneous failures	I
Number not stated	I
	_
Total number of accidents reported	25

Of the 29 respiratory failures there were 5 deaths, a percentage of 17½. Of the 4 circulatory failures there were 2 deaths, a percentage of 50. The 1 case of arrest of respiration and circulation simultaneously resulted in death.

This summary is particularly interesting in that the great majority of accidents were due to respiratory failure and not to the heart, and this failure was irrespective of age, sex, condition, or magnitude of operation; also that the accident may occur before, during, or after the operation; and, finally, that in some instances circulatory failure takes place while respiration continues.

<sup>\*</sup> Provided the patient is in ordinary health. We would prefer to make the last sentence read, "Anæsthesia can be safely produced by chloroform." (Hare and Thornton.)

<del></del>										
Name of reporter.	Age.	Sex.	Operation.	State of pa- tient at time of beginning anæsthetic.	Kind of chlo- roform ad- ministered.	Anæs- thetist.	How ad- ministered.	Rapidity of adminis- tration.	Concen- tration of vapor,	Length of time chloroform had been adminis- tered at time of accident.
***************************************	az yrs.	Male.	Oblique inguinal hernia.	Patient calm.	Squibb's C. P. chloro-	Skilled.	On towel.	Few drops	Plenty of	5 minutes.
A. M. Haydem, Evansville, Ind.	67 yrs.	Male.	Epithelioma of upper lip.	Patient calm.	form. Chloroform.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.
H. S. Harrington, Bertrand, Neb.	8 mos.	Male.	Talipes varus.	Not stated.	U. S. P. chloroform.	Skilled.	Not stated.	Not stated.	Not stated.	Not stated.
Γ. F. Hallett, Rose, N. Y.	6 yrs.	Male.	Amputation of cut finger.	Not stated.	Quality of chloroform not stated.	Skilled.	Not stated.	Not stated.	Not stated.	Not stated.
V. H. Washburn, Milwaukee, Wis.	45 yrs.	Male.	Renal colic.	Not stated.	Squibb's C. P. chloro- form.	Skilled.	On hand- kerchief.	Few drops at a time.	Plenty of air.	Not stated.
M. P. Murin, Den- ver, Col.	9 yrs.	Male. Male. Male. Male. Male. Male. Male. Male. Male. Male. Male. Female. Male. Male. Female. Male. Male. Female. Male. Female.	Tenotomy of tendo Achillis and plan- tar fascia.	Not stated.	Not stated.	Unskilled intern.		Pushed as Concen- if it were trated vapo of chloro- form.		Operation half over; time not stated.
M. P. Murin, Denver, Col.	92 yrs.	Male.	Tight stricture; internal urethrot- omy.	Patient calm.	Pure chloro- form.	Not stated.	Not stated.	Not stated.	Not stated.	Operation over; exact time it had been admin- istered not
M. P. Murin, Den- ver, Col.	45 yrs.	Male.	Stricture.	Took drug badly.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	Operation not begun; time not stated.
E. Lamphear, Kansas City.	Not stated.		Cancer of pan- creas.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.
A. W. Wilmarth, Norristown, Pa.	16 yrs.	Female.	Epileptic convul-	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.
T. Southworth, Monroe, Mich.	Not stated.		Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.
C. T. Southworth, Monroe, Mich.	Not stated.		Not stated.	Not stated.	Not stated.	Skilled.	Esmarch inhaler.	Few drops at a time.	Plenty of air.	Operation nearly over; exact time
C. D. Wescott.	16 yrs.	Male.	Sarcoma.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	not stated. Not stated.
No. 1.	3 <b>yrs</b> .	Female.	Harelip, cleft pal- ate.	Not stated.		***************************************				***************************************
. H. Kellogg, Bat- tle Creek, Mich.	24 <b>y</b> 28.	Male,	Left inguinal her- nia.	Quiet.	Chloroform supposedly pure.	Not stated.	Junker in- haler,	Given care- fully.	Not stated.	Late; opera- tion almost completed.
Reynolds, Hor- ton, Kan.	28 yrs.	Male.	Enteralgia.	Quiet.	Squibb's C. P. chloro- form.	Not stated.	Handker- chief.	Patient pulled drug over face	Not stated.	After a few moments.
	5 yrs.	Male.	Crushed finger.	Not stated.	Not stated.	Unskilled.	Not stated.	and mouth. Given care- fully.	Not stated.	Early in ad- ministration.
H. Mallens Wat- son, Norfolk, S. D.	2 yrs.	Male.	Removal of can- cerous tentacle.	Not stated.	Not stated.	Not stated.	Not stated.	Given care- fully.	Not stated.	5 minutes.
Robt. T. Morris, New York.	4 yrs.	Male.	Club-foot.	Took drug well up to time of full	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	***************
Robt. T. Morris, New York.	30 yrs.	Female.	Dilatation of cer- vix.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	Before opera- tion; time not stated,
Robt. T. Morris, New York.	35 yrs.	Female.	Straightening a flexed uterus.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.
T. Webster, Emporia, Kan.	4 yrs.	Male.	Paraphimosis.	Not stated.	Not stated.	Unskilled.	On cloth.	Not stated.	Not stated.	Not stated.
J. T. Webster, Emporia, Kan.	Not stated.	Male.	Amputation of the thumb.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.
N. Coons, Pal- myra, Mo.	Young adult.	Male.	Removal of ne- crosed seques- trum of tibia.	Very weak and ex- hausted.	Not stated.	Skilled.	Not stated.	Not stated.	Well dileted with air.	Not stated.
J. P. Hachenberg, Austin, Texas	35 yrs.	Female.		Not stated.	Not stated.	Skilled.	Not stated.	Not stated.	Not stated.	A few min- utes.
	i					CI III. I	N	N-1 -1-1-4		Not started
G. W. Shidler, York, Neb.	38 yrs.	Male.	Fistula in ano.	Not stated.	Not stated.	Skilled.	Not stated.	Not stated.	Not stated,	Not stated.

11 一种推出证明 一個

Ouan-	<u> </u>	ļ <sub>e</sub> .	1		1		<del></del>	I
tity ad- minis- tered up to this time.	First symptoms.	State of patient at time of accident.	1	Heart stopped first.	Time of accident.	Remarks.	Treatment.	Resul
8 c.c. of drug taken.	Patient suddenly livid.	Strug- gling.	eral minutes before		Operation not begun	<u> </u>	Inverted and ar- tificial respira- tion.	Death
Not stated,	Suddenly respira- tion and pulse ceased.	Not stated	heart stopped. Both practically ceased at once.		Not stated.	Has seen a number of non-fatal cases have respiratory failure, and resuscitated them.	Inverted and ar- tificial respira- tion.	
Not stated.	Slight gasps given.	Not stated	Breathing stopped three minutes; heart continued to bear for this period after cessation of respiration.		. Not stated.		***************************************	 
Not stated.	Patient stopped breathing.	Not stated	Breathing stopped;	••••••	. Not stated.	withdrawn from 2 to 4 minutes before accident occurred.	Inverted and ar- tificial respira- tion.	ery.
Not stated.	Respiration ceased.	Not stated	1		No opera- tion.	After first recovery chloroform again given, and accident repeated.	Artificial respiration.	Recovery.
Full quanti- ty; exact amount not stated.	Respiration ceased.	Proba- bly not strug- gling.			Operation half over.	grain sulphate of morphine was given before ansesthetic was begun.	Artificial respiration for 25 minutes.	Recov
Not stated.	Face suddenly purple; eyes protruded.	Quiet.	Respiration ceased; pulse strong.		Operation over.	Respiration stopped, as bladder was distended with irrigation.	Artificial respiration, inversion, nux vomica, belladonna, whiskey.	ery.
Not stated.	Spasm of muscles of respiration; respiration stopped.	Strug- gling.	Respiration ceased; pulse good.		Operation not begun.	All muscles of respiration very spastic.	Inverted and ar- tificial respira- tion.	
Not stated.	Respiration stopped.	Not stated.	utes.		Operation begun.	Respiration stopped as finger touched diaphragm through an incision in belly.	Artificial respi- ration and stimulation.	
Not stated. Not		Not stated. Not			Not stated.		•••••	Death
stated. Not stated.	Not stated. Stopped breathing	stated.	Respiration stopped before heart. Respiration stopped; radial pulse good.		Not stated, Operation over.	Operator and others noticed that pulse continued. Operator and others noticed that pulse continued.	Not stated.	Death
Not stated, but large	Respiration ceased.	Quiet.	Respiration stopped, but pulse full and strong.	·····	Operation not yet begun,	•••••••••••••••••••••••••••••••••••••••	Artificial respi- ration and in- version.	Recov-
							Artificial respi- ration and in- version.	Recov
Not stated.	Face assumed livid color.	Not stated.	<u>}</u>	Heart stopped; respiration continued for a few moments.	Operation completed.	Particular attention paid to see which stopped first, heart or respiration.		Death.
Not stated.	Respiration stopped.	Not stated.	Respiration stopped; heart strong.	monients.			Artificial respiration.	Recovery.
Not stated.	Pulse stopped; respiration la- bored.	Not stated.		Pulse stopped; respiration labored.	Operation not com- pleted at time of accident.	Same occurrence three times in same case before operation was completed.	Artificial respiration and stimulation.	Recovery.
Not stated.	Respiration ceased.	Not stated.	Respiration ceased.	•••••••	Before op- eration.	The accident being repeated, no operation was done until next day; then under ether, without difficulty.	Artificial respiration.	Recovery.
Not stated.	Stopped breathing.	Not stated.	Respiration ceased.		Not stated.	······································	Not stated.	Recovery.
Not stated.	Cessation of res- piration.	Not stated.	Respiration ceased; pulse good.		Just before operation.		Not stated.	Recovery.
Not stated.	Stopped breathing.	Not stated.	Respiration ceased.	••••••••	Not stated.	•••••••••••••••••••••••••••••••••••••••	Not stated.	Recovery.
Not stated.	Stopped breathing.	Not stated.	Respiration ceased; pulse continued good.	••••••	Not stated.		Inverted and ar- tificial respira- tion,	Recov-
Not stated.	Stopped breathing.	Perfect- ly limp.	Respiration ceased; pulse full and regular.		During op- eration.	•••••••••••••••••••••••••••••••••••••••	Inverted.	Recovery.
Not stated.	Pulse stopped for at least z minute.	Not stated.	•••••••••••••••••••••••••••••••••••••••	Pulse could not be felt.	Not stated.	Thinks death would have re- sulted had he not closely watched the pulse.	Stimulated with ammonia, and fresh air ad-	Recovery.
Not stated.	Stopped breathing.	Deathly pale.	Respiration ceased.	**********	After opera- tion, and patient stood erect.	Attributes the accident to his allowing patient to regain her feet too soon after operation.	mitted to room. Artificial respira- tion and cold interrupted douche to chest.	Recovery.
3 or 4 drachms	Heart ceased to beat.	Not stated.		Pulse could not be felt; respiration continued for a min- ute longer.	Not stated.	Patient had taken chloroform ten years ago for extraction of tooth.	Artificial respiration.	Death,

#### Report of Accidents occurring during the Use of

Name of reporter.	Age.	Sex.	Operation.	State of pa- tient at time of beginning anæsthetic.	Kind of chlo- roform ad- ministered.	Anzs- thetist.	How ad- ministered.	Rapidity of administration.	Concentration of vapor.	Length of time chloroform had been admini- tered at time of accident.
Louis J. Pons, Roxbury, Conn.	25 yrs.	Male.	Not stated.	Not stated.	Not stated.	Not stated.	On napkin.	Not stated.	Not stated.	Not stated.
J. T. Baldwin, Columbus, O.	Elderly adult.	Female.	Removal of ure- thral caruncle.	Not stated.	Not stated.	Young physician.	Not stated.	Not stated.	Not stated.	A few minutes.
A. W. Wilmarth, Norristown, Pa.	ı6 yrs.	Not stated.	No operation; given to quiet epileptic convul-	Struggling.	Not stated.	Skilled.	Not stated.	Not stated.	Not stated.	A few minutes.
T. Walter Todd, Redondo Beach, Cal.	Not stated.	Female.	sions. Not stated.	Not stated.	Not stated.	Skilled.	Not stated.	Not stated.	Not stated.	A few minutes.
Louis J. Pons, Roxbury, Conn.	6 yrs.	Male.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.
Thos. R. Savage, New York.	30 yrs.	Female.	Operation upon rectum.	As the pa- tient was in- sane, it is probable she was	Not stated.	Not stated.	Esmarch inhaler.	Not stated.	Admixture of air.	Not stated.
Thos. R. Savage, New York.	24 yrs.	Male.	Removal of cathe- ter from bladder.	not calm. Not stated.	Not stated.	Not stated.	Esmarch inhaler.	Not stated.	Admixture of air.	Not stated.
Thos. R. Savage, New York.	47 YFS.	Female.	Carcinoma of breast,	Not stated.	Not stated.	Not stated.	Esmarch inhaler.	Not stated.	Admixture of air.	Before anza- thesia was complete.
Thos. R. Savage, New York.	7 days.	Male.	Spina bifida.	Not stated.	Not stated.	Not stated.	Esmarch inhaler.	Not stated.	Admixture of air.	Not stated.

THE CLIMATE OF WESTERN NORTH CARO-LINA, WITH A CONSIDERATION OF THE RELATIVE VALUES OF HIGH AND MEDIUM ALTI-TUDES IN THE TREAT-MENT OF PULMONARY TUBERCULOSIS.

Read before the Pan-American Medical Congress in the Section of Climatology and Demography, September 4, 1893.

BY KARL VON RUCK, M.D., ASHEVILLE, N. C.

M. PRESIDENT AND GENTLEMEN:—
In speaking of North Carolina, and especially its mountainous part in the western portion of the State, which is already widely and favorably known on account of its climate, I shall necessarily have to repeat what I have stated elsewhere at various times and what has been stated by others before my time.

That part of Western North Carolina known as the Asheville plateau has, in the parlance of climatologists, only a medium elevation of some two thousand five hundred feet above sea-level. There are, however, within a radius of thirty miles of Asheville and encircling the plateau, both higher and lower levels, and within a few hours' journey we can reach elevations varying from twelve hundred to nearly seven thousand feet. If it should appear desirable, these elevations can be made use of in the climatic treatment of phthisis and other diseases.

Some writers, and especially those who practise at much greater elevations than that of the Asheville plateau, convey to us the impression that only the higher levels are really curative in the climatic treatment of phthisis, and that such levels as the one to which I am now calling your attention are a sort of medium, "neither good nor bad." They therefore almost deny to the medium and lower level resorts the right of existence, as being of use only as a makeshift at best, whereby the chances for the patient's ultimate recovery are liable to be trifled away.

If this view is really warranted by the facts, a prompt recognition of it by all who have occasion to send away phthisical patients for climatic treatment would be most desirable.

The inconsistency of the position is, however, manifest, apart from the fact that clinical experience disproves the assertion.

If elevation is beneficial at all,—and no one experienced in phthiso-therapy denies that,—the most that could be claimed theoretically would be that it is relatively so, according to the degree obtained; for it would be strange indeed that two thousand five hundred feet should count for nothing, whereas six thousand nine hundred and thirty feet are auspicious!

I hope, however, to show you that a golden mean is not to be ignored any more in this than in many other of our endeavors, and that, other

Chloroform	to	produce	General	Anæsthesia.—Continui	D.
------------	----	---------	---------	----------------------	----

Quantity administered up to this time.	up his First symptoms. State of patien at time of accidents		of acci-		Time of accident.	Remarks.	Treatment.	Result.	
Not stated.	Not stated.	Not stated.	Respiration ceased.		Not stated.		Artificial respi- ration; hypo- dermic injec- tion of ammo-	Recov- ery.	
Not stated.	Respiration ceased and heart feeble.	Not stated.	Respiration; pulse good for some time.		Not stated.		nia, Artificial respi- ration.	Death.	
Not stated.	Respiration sud-	Not stated.	Respiration ceased.		Not stated.		Artificial respiration.	Recov- ery.	
Not stated.	Respiration ceased.	Not stated.	Respiration ceased.		Not stated.	Same accident occurred twice in this operation.	Artificial respiration,	Recov- ery.	
Not stated.	Not stated.	Not stated.	Respiration ceased.		Not stated.		Artificial respi- ration; hypo- dermic injection	ery.	
Not stated.	Respiration coased.	Not stated.	Respiration ceased.		Under full anæsthesia during op- eration.	The same result was experienced a month later in another opera- tion upon her.	of ammonia. Artificial respiration and inversion.	Recov- ery.	
Not stated.	Respiration ceased.	Not stated.	Respiration ceased.		Under full anæsthesia during op-		Inversion and artificial respiration.	Recov- ery.	
Not stated.	Respiration ceased.	Not stated.	Respiration ceased.	••••	eration. Before complete anæs- thesia.	times, and as it was thought this was a case with idiosyn- crasy to chloroform, ether was substituted, with satisfactory	Artificial respiration.	Recov- ery.	
Not stated.	Cyanosis and ar- rested respiratory movement.	Not stated.	Respiration ceased.		During op- eration.	result.	Inversion, and slaps upon back.	Recov- ery.	

things equal, a medium elevation presents advantages over high levels like Colorado and other portions of the Rocky Mountain system, by which we find ourselves clearly the gainers.

At a medium elevation of from two thousand to three thousand feet, like the one of the Asheville plateau, the heart-action is not disturbed to such a degree as is the case at elevations much higher, and while the influence of the change is perceptible at lower levels also, patients do not suffer on account of shortness of breath and palpitation of the heart, so frequently complained of by consumptives in going to high altitudes.

The shortness of breath is in part induced by the rarefied atmosphere, of which a proportionally larger volume is required to convey to the blood an adequate amount of oxygen. health this is to a degree compensated by deeper respiration; but the patient who has his respiratory capacity perceptibly decreased on account of the changes which have occurred in the lung can make up the deficiency, for the most part, only by increased frequency, or not at all, if the elevation has reached a considerable de-To this comes the additional disadvantage, that the degree of possible lung expansion is less in proportion as we decrease the atmospheric pressure, which was demonstrated as long ago as 1850 by Pravaz and subsequently by Lange and others, and I have recently repeated their experiments, both under increased and decreased atmospheric pressure, in the pneumatic cabinet. I find, as they did, that if, under ordinary air-pressure, a healthy person performs complete expiration, and thereupon attempts forcible inspiration through a tube connected with a mercury manometer, the mercury is raised four and a half to five cubic centimetres. If now the air-chamber is closed and the pressure in it increased, upon a repetition of the experiment the mercury rises higher in proportion to the increased pressure. If the pressure in the chamber is diminished, the result is reversed and lesser values are obtained than under ordinary pressure, corresponding again to the degree of rarefaction. By practice, higher values are obtained in either case, but the relation of the rise of the mercury in the manometer to pressure and rarefaction remained constant.

The same experiments carried out with patients suffering from pulmonary tuberculosis showed identical results, but it was noted that the inspiratory and expiratory forces were always below the normal, and even in comparatively early-stage cases a diminution of fifteen to twenty-five per cent. was the rule.

It is, therefore, erroneous to believe that the respiratory capacity of the lungs is greater under diminished air-pressure; on the contrary, it is proportionally less, as is also the degree of oxy-

genation of the blood, which is dependent upon it and upon the density of the atmosphere.

If, in addition, we observe the effects of greatly-diminished air-pressure upon the circulation of the phthisical patients, and especially of such as have advanced beyond the very early stages, we find that it is not borne as well as it is in the case of persons having no lung-disease; and while in all cases the peripheral circulation is increased as the surface pressure is diminished, in health the veins can empty themselves freely into the right auricle and ventricle, whence, under increased frequency of respiration with unobstructed lung-tissue, the flow through the pulmonic system to the left heart is equally free, and in this manner an equilibrium between the greater and lesser circulation is maintained.

If, however, the lung cannot fully expand from the too great rarefaction of the air, and if the lung suffers in addition in its expansion by the presence of pleuritic adhesions, thickening, or exudates, or if the parenchyma of the lung is itself the seat of inflammatory changes, infiltrations, or consolidations, then there is a mechanical obstruction placed in the lung to the free flow of blood from the right ventricle through the lung to the left auricle, and the equilibrium between the lesser pulmonic and the greater systemic circulation is easily disturbed or lost.

The heart is now called upon to compensate the disturbance by increased power and frequency of contraction, and under rest or with a strong heart-muscle, when the obstruction is not too formidable, this equilibrium may be obtained or re-established.

If the conditions for perfect equalization of the circulation are not present, then passive pulmonary congestion and heart-strain are the inevitable results. In some cases, at great elevations, this can be only avoided by absolute rest in the recumbent position, while with others it is impossible under all circumstances, and the patient, unless quickly removed to a lower level, soon dies, either from pulmonary hemorrhage, cedema, or heart-failure.

In still others the congestion leads to renewed or increased active, possibly destructive, changes and their consequences, and in all this equalization of circulation is more readily disturbed by comparatively slight causes which at lower levels are inoperative.

The greater the elevation the greater is the liability to these undesirable effects.

At high altitudes much less exercise is, therefore, possible without resulting in pulmonary congestion and heart-fatigue, conditions which cause shipwreck in the journey for health of the

consumptive more frequently than all other preventable causes combined.

Consumptives are more liable than others to pulmonary congestion and heart-fatigue at any level: first, because of the obstruction to the circulation produced by the lung-disease, and, second, because of the accompanying nutritive disturbances and anæmia; the heart in most cases is already damaged, weak, and irritable, and seldom in a condition which justifies us in making great or unusual demands upon it, and this is often true even in the early stages of the disease.

It follows, therefore, that we cannot employ altitude in the treatment of phthisis on the principle "the greater the elevation the better for the patient;" and I find from practical experience that, even at a medium elevation of two thousand three hundred and fifty feet, the tendency to heart-fatigue is more manifest than I have found it to be at places with lower elevations.

I have thus had occasion to advise the removal of patients to lower levels because of circulatory disturbances, in the absence of actual heart-disease, which were unquestionably due to the reduced atmospheric pressure, inasmuch as they did not exist before leaving home, and promptly subsided when my advice was complied with.

Any unusual demand upon the heart—be that on account of change in the atmospheric pressure, physical exercise and labor, or other strain—must, therefore, have our careful consideration, and be avoided unless in cases where we are reasonably sure that the heart is adequate to the demand and that our patient will be benefited thereby.

The liability of consumptives to heart-strain, with its consequences, exists also when going from high altitudes to considerably lower levels, and, other things being equal, the effects are in proportion to the degree of change in atmospheric pressure and the rapidity with which the change is made.

At a medium elevation these effects are better borne because the strain is less, and patients still in a condition where improvement and cure can reasonably be looked for can come to and return from lower levels with greater safety.

The danger of returning to sea-coast localities of patients who were considered cured at the high elevations of Colorado and New Mexico is recognized even by the laity, and physicians, both at the elevated stations and at home, recognize the fact by advising against it, so that it practically means exile from home

and friends and from former associations for life, to send consumptives to very high elevations, to say nothing of the dangers and disadvantages to which they may be thereby exposed.

If it were true that by these means only a relative cure can be accomplished, the sacrifice and risk would be imperative although regretable.

There are still other disadvantages of highlevel resorts, among which I may mention the great ranges of temperature.

Extremes not only in altitude but also in temperature are undesirable for the consumptive.

If he is to live out of doors as much as possible, he must avoid great degrees of cold, against which he finds it difficult to protect himself, especially when not taking active exercise, and against the enervating extremes of heat he cannot protect himself at all.

With these extremes occur great and sudden variations in temperature, and these the consumptive feels to his detriment in any stage of the disease.

According to Dr. J. W. Gleitsman, who made temperature comparisons between some high-altitude resorts of Colorado and the medium elevation of Asheville, N. C., in 1874, a temperature of 90° F. (with a maximum of 102° F.) occurred at Denver, Col., fifty times and at Colorado Springs thirty-nine times during

the same summer, when at Asheville, N. C., only once a temperature as high as 88° F. was observed. He also found similar, only reversed, extremes for the winter months, during which, owing to its geographical position and lower altitude, the Asheville plateau, with an average of 49° F. for the winter months, is free from severe cold weather. Snow rarely falls, and when it does, the sun usually melts it away on the same day.

That a happy medium is best is also true as to "a comparatively dry climate," which constitutes another desirable factor in the climatic treatment of phthisis.

Too great dryness of the air is, however, undesirable, becoming frequently a source of irritation to the lungs and throat, and Dr. Rudi, of Denver, recognizing the disadvantage, advises the generation of steam in the patient's sleeping apartment.

Great dryness of the air is associated with prolonged dry spells and the absence of rain, which means a large amount of dust floating in the air, the inhalation of which should be avoided in all lung- and throat-affections.

At lower levels the air contains relatively more moisture, and upon the Asheville plateau the average relative humidity for the entire year is sixty-five per cent., while at some points in Colorado and New Mexico it is no doubt much lower.

Sixty-five per cent. is, however, relatively

The United States Weather Bureau Meteorological Observatory at Winyah Sanitarium, Asheville, N. C. SUMMARY OF METEOROLOGICAL RECORDS FOR THE YEARS FROM 1888 TO 1892 INCLUSIVE. Elevation, 2350 feet. Latitude, 35° 36' N.; longitude, 82° 26' W. Hours of observation, 7 A.M., 2 P.M., and 9 P.M.

Үсагэ.	Senson.	Mean temperature.	Mean maximum tempera- ture,	Mean minimum tempera- ture.	Absolute maximum tem- perature.	Absolute minimum tem- perature.	Mean daily range of tem- perature.	Mean daily variation of temperature.		Mean absolute humidity in grains of moisture per cubic foot of air.	Mean number of clear and fair days per month.	Number of cloudy and rainy days per season.		Which 1 inch or more of rain fell per month.	Mean per cent. of ozone of possible amount per month.	Mean barometer (corrected for altitude and tempera- ture).	Mean amount of rainfall in inches per month.	Direction of prevailing winds.	Mean force of wind, scale o to 6.
1888-89 1889-90 1890-91 1891-92	Winter.	44.46 48.68 45.18 44.83	55-35 59-30 55-56 55.11	35.46 37.93 72.68 33.73	69.50 74.30 63.33 60.40	20 20 18.50 17.98 16.16	19.73 21.33 90.83 21.37	2.45 2.80 2.85 2.65	60.18 64.60 63.40 64.78	2,177 2,585 3,771 2,009	24.3 27.6 25.0 25.0	6.3 3.0 6.0 6.0	2 0 1	11.5 13.3 11.6 11.0	51.00 40.20 56.00 55.10	30.13 30.15 30.14 30.13	4.36 4.29 4.23 1.64	N. N. N. N.W.	2.12 2.44 1.80 1.45
Sums		183.15	225.32	179.80	<b>2</b> 69.53	72.84	82.66	10.75	252.90	10.532	101.9	21.3	4	47-4	202.30	120.53	14.52		7.91
Means for 4 years.	Winters.	45-79	56.44	44-95	67.38	18.91	20.66	2.69	63.22	<b>s</b> .633	25.4	5-3	1	32.8	50-57	30.13	3.63	N.	1.98
1899 1892 1892	Summer.	64-97 65.24 65.49 67.68	75.83 76.00 76.59 78.63	54-33 56.25 54-57 57-45	85.30 85.63 86.60 88.40	39.50 45.90 43.00 46.60	21.33 19.73 23.00 21.00	3.00 2.70 2.60 2.80	70.98 71.00 68.06 71.37	4.36e 4.290 4.230 1.640	24.5 24.6 25.5 20.0	5.3 5.5 8.9 10.0	1 0 1	6.5 9.6 11.1 9.5	49.40 44.82 53.48		2.09 3.12 3.94 3.98	N.W. N.W. N.W. N.W.	1.39 1.41 0.80 1.00
Sums	•••••	263.58	307.05	222,60	345.93	174.30	85.06	11.10	281.41	14.520	94.6	29.7	•	36.7	147.04	120.63	13.13		4.50
Means for }	Summers.	65.89	76.76	55.65	86.48	43.30	21.94	2.77	70.35	3.630	<b>23</b> .6	7.4	*	7-4	49.00	30.15	3.98	N.W.	1.19

dry, and compares favorably with the lowlands, where the average is in the neighborhood of eighty per cent.

The number of clear and fair days at a given climatic resort is also important, as upon them depends largely the patient's ability to derive the full benefit of climatic treatment in living out of doors as much as possible.

Many of the localities with medium or lower elevations will compare in this respect with the higher levels, and the Asheville plateau has averaged twenty-five clear and fair days for each month in the five years since the establishment of the United States Weather Bureau in 1888. In the past year there have not been more than three or four days on which my patients did not have the advantage of out-of-door life on account of unfavorable weather.

The Asheville plateau can, therefore, claim freedom from all extremes in elevation, temperature, or humidity; it has every condition favorable to out-of-door life; it is an all-year favorable locality, where in the residence of the invalid no change is required with change of season. It is easily accessible, being within twelve to twenty-four hours' travel of the Eastern, Southern, and Middle States, obviating the more serious and frequently detrimental fatigue from days of travel to localities of greater elevation and greater distance.

That such resorts of medium elevation deserve consideration is apparent from the estimation in which they are held by the profession, and much lower levels than the Asheville plateau have shown excellent records in improvements and recoveries obtained, and the facts presented regarding the disadvantages of high altitudes outweigh, in my judgment, any supposed advantage claimed for them; but, apart from the foregoing considerations, we must consider as our best guide the clinical results obtained, and compare them.

Speaking for Western North Carolina, and the Asheville plateau in particular, I am able to record equally good, if not better, results than have ever been shown for the high-level resorts, and, without going into details, I can say that in the truly early stage I have for several years past obtained one hundred per cent. of recoveries in all cases who remained a sufficient length of time to justify the expectation, while not a single early-stage case has failed to show improvement from even a comparatively short season of residence.

The high-level resorts cannot possibly do better, and with these results the plea for more than medium elevation must fall to the ground.

I have now records of five hundred and

eighteen cases treated and discharged more than two years and as long as five years ago.

The permanency of the results in these cases was inquired into this past winter by correspondence with patients, their relatives, or their physicians.

With but few exceptions, they have all returned to their previous places of residence, and the answers received show that a cure or permanent arrest of the disease continues in one hundred and eighty-one, or thirty-five per cent.; two hundred and ninety-six others, or fifty-six plus per cent., continue still improved as compared with the time of their arrival at Asheville; and only seventy patients have grown worse or have died.

Not until better results and of equal duration can be shown for higher-altitude resorts need the profession seriously consider any possible advantage they may claim over lower or medium levels.

In conclusion, I desire to say that I am not unmindful of excellent results obtained in high altitudes, especially in the early stage, nor of the fact that the statistics of the high-level resorts are seriously clouded by the unfavorable course and bad results in cases at all advanced in the disease, and who were erroneously sent to them.

I claim, however, that such early-stage cases could have derived the same benefits at lower levels without subjecting them to the dangers pointed out in the earlier part of this paper, and that many of the advanced cases who fail to improve or grow worse at high altitudes could derive benefit at places having only a medium elevation.

#### DISINFECTION IN 1803.

LAVRAND (Journal des Sciences Médicales de Lille; Revue Général de l'Antisepsie, 6 année, tome i.) states that theoretically we are now thoroughly equipped for a victorious struggle against nearly all infectious and epidemic diseases; but, as a matter of fact, there is no antiseptic which in its practical application to the needs of daily life will give the results which are obtained in the experimenter's laboratory.

The recognized disinfectants of the day are heat and certain chemical substances, also the desiccating action of air and direct sunlight. Heat is applied by means of boiling water to which has been added carbonate of soda, by steam under pressure.

The most reliable chemical agents are solutions of carbolic acid, 5 per cent.; chloride of mercury, o. 1 per cent.; quick-lime, chloride of lime, and lysol.

# The Therapeutic Gazette

EDITED BY
H. A. HARE, M.D.,
GENERAL THERAPEUTICS.

With special departments under the charge of G. E. DE SCHWEINITZ, M.D., OPHTHALMIC AND AURAL THERAPEUTICS,

AND
EDWARD MARTIN, M.D.,
SURGICAL AND GENITO-URINARY THERAPEUTICS.

#### GEO. S. DAVIS,

Medical Publisher, Box 470,
DETROIT, MICH.

Philadelphia, 714 Filbert Street.

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136 Gower Street, London. Price 10s. Remittances may be made either by Postal Order or Stamps.

Price to Foreign Subscribers direct (postage included), \$2.50 (10 shillings). English postage-stamps received on remittances.

Editorial communications should be addressed 222 South Fifteenth Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

Authors will receive reprints in pamphlet form, without charge, provided the request for them be written on the articles sent.

Business communications should be addressed to the Publishers.

#### Leading Articles.

#### CONCERNING MILD CONJUNCTIVAL IN-FLAMMATIONS AND THEIR LOCAL TREATMENT.

T has been estimated that about sixty-three per cent. of patients applying for treatment of their eyes in hospital service, and probably half that number in private practice, suffer from one or more of the diverse types of conjunctival disease. Not the least important, so far as the comfort of the patient is concerned, are the minor inflammations, —irritations, hyperæmias, and mild conjunctivitis. Often rapidly dissipated by means of simple soothing lotions, they occasionally cling with aggravating persistency to their area of occupancy. when the cause is removed—local irritants, lachrymal obstructions, diseases of the nasopharynx, various states of depraved health, vaso-motor disturbance, and eye-strain, either

from defective muscular balance or from uncorrected ametropia—the conjunctiva may be long in assuming a normal aspect.

For more than a dozen years solutions of boric acid have been much employed by ophthalmic surgeons under these circumstances, as well as for inflammations of a higher grade which affect this membrane. A saturated solution (about four per cent.) would be a suitable strength were it not that there is a tendency, with the changes of temperature, for the drug to be deposited at the bottom of the vessel which contains the lotion; hence it is ordinarily employed in three-per-cent. solution. in which strength it is detergent, slightly astringent, and moderately antiphlogistic, at least these are the virtues to which its favorable action is usually ascribed. True, feeble antiseptic properties are also attributed to it, but if at all efficient in this respect, the concentration should be about 1 to 13, and not 1 to 33, as it is generally used; and as this concentration is not possible except under special conditions, it does not avail in practical therapeutics.

The detergent properties are probably the most important. Alkalinity of the lotion and corresponding improved cleansing power may be effected, as suggested by Jackson (Philadelphia Polyclinic, August, 1893), by the addition of sodium biborate in the proportion of four grains to the ounce, although his statement that a solution of boric acid itself is faintly alkaline is not in accord with generally accepted ideas, nor with tests which have been made to ascertain the accuracy of this assertion. Probably owing to the slight astringency of boric acid, many patients complain of an unpleasant dry sensation after its solution has been applied to the conjunctiva. It may be almost wholly avoided without destroying this or any other qualities of the drug, by adding two to four grains of sodium chloride to Indeed, the addition of the the mixture. salt enhances the therapeutic value of the lotion.

The usual method of applying these solutions is with a pipette or by means of an "eyecup," but distinct advantage is gained by atomizing the fluid with an ordinary hand instrument or, still better, with the aid of an air-compressor, the pressure being just sufficient to create a uniform gentle spray, which is allowed to play upon the inflamed or irritated surfaces. The liquid thus applied readily cleanses the affected areas, and probably medicates not merely their surface, but slightly penetrates the tissues and correspondingly increases the extent of the contact and prolongs

the action of the drug. It is not improbable that equally good effects may be secured with a physiological salt solution, or even with boiled distilled water; but the distinct value of the drugs just described is so universally conceded, and, indeed, demonstrated, that no good reason can be assigned for dismissing them from practice.

When the conjunctival affection assumes a hyperæmic type, abnormal secretion being practically absent and the congestion largely confined to the bulbar conjunctiva, excellent results are obtained by using a method advocated by Königstein ("Die Behandlung der häufigsten und wichtigsten Augenkrankeiten," Wien, 1889) in the treatment of vaso-motor blepharitis,—namely, douching the closed lids with water at a temperature of 60° F. from a vessel raised a short distance above the head of the patient, the fluid being conducted through a small apparatus in the form of the rose ordinarily seen upon watering-cans, and thus distributed in fine shower-like jets. The temperature of the water may be varied according as a hot or cold lotion is indicated, and the application is more agreeable, if not more efficient, by the addition of a little eau de Cologne.

Washing of the eyes with tepid water and Castile soap is productive of good results,-a method likewise suited to forms of moderate conjunctivitis characterized by a secretion just sufficient to glue the lids in the morning. It is astonishing how this simple procedure, much employed by Knapp in preparing eyes on which the operation for extraction of cataract is to be performed, will subdue redness and irritability of the conjunctiva and margins of the The stronger astringents and antiseptics, -alum, sulphate of zinc, bichloride of mercury, and particularly nitrate of silver,-while fulfilling evident indications in more aggravated lesions of the conjunctiva, are not applicable to these moderate affections, which yield more readily to the mild measures which have been described.

#### ANÆSTHESIA.

In this number of the Therapeutic Gazette there appears an article giving the results of a research upon the action of chloroform, which was instituted with the object of reconciling certain divergent views upon this much-discussed topic. For the results which have been obtained we refer the reader to the article itself, but there are other questions connected with this subject not there discussed. It is not

intended in this editorial to raise the old question of the relative safety of the various anæs-The object is to emphasize the fact that there are indications governing the employment of the various anæsthetics, which indications should be followed quite as rigorously as are the indications which govern the employment of digitalis, strophanthus, alcohol, or nux vomica in the treatment of cardiac disease. There are probably no drugs which are so commonly employed by routine as are the two anæsthetics, chloroform and ether. In the Atlantic States, certainly the Northern Atlantic States, ether is practically always employed. and so general is this use that the surgeon simply instructs his assistants to anæsthetize the patient, knowing that they will employ ether as a matter of course. On the other hand. in the southwestern part of the United States the employment of chloroform is equally a matter of routine. There are, of course, certain grave reasons for the employment of chloroform as a matter of routine when the temperature is high and when the altitude is such that the employment of ether is difficult and expensive. It is also true that in the presence of a great emergency chloroform must be used in order to anæsthetize a large number of individuals in a short time. And, again, it is necessary in some instances where disease of the blood-vessels or kidney exists to use chloroform in preference to These facts are pointed out in the paper to which we have already referred.

Of one thing we are confident in regard to the use of anæsthetics, that they are too freely and frequently administered. There are a large number of cases which require no general anæsthesia for the relief of suffering, and this is particularly the case since cocaine has been introduced. Again, in many instances the full physiological effect of the anæsthetic is produced, although the operation is so much of a minor one that in reality only a few whiffs of the drug are neces-In most of the minor operations, such as opening abscesses and boils, it will be found that by the careful administration of chloroform or ether sufficient anæsthesia is produced in the primary stage of the influence of the drug to almost entirely prevent pain, and by this means the patient avoids the depression and prolonged convalescence which always follow full anæsthesia. In instances where the operation is a minor one, and yet is too severe or prolonged to permit of the use of primary anæsthesia, we believe that bromide of ethyl is the anæsthetic which should be resorted to. In earlier numbers of the Therapeutic Gazette evidence has been adduced, both in the Original.

Editorial, and Progress columns, of the value of this liquid, which we believe has been unjustly ignored. There is no substance which can absolutely destroy consciousness, and by so doing act upon the most vital portions of the nervous system, without some danger, and without in some instances producing more or less aftereffects, but there is no evidence that bromide of ethyl produces disagreeable symptoms as frequently as do chloroform and ether, while its rapid and fugitive action enables the surgeon to place the patient beyond the reach of pain in a few seconds and to bring him back to consciousness in an equally short time.

Finally, we are convinced that in a certain number of cases all anæsthetics produce changes in the nervous system which are not generally recognized; particularly is this the case if the anæsthesia is prolonged and profound. Careful observation will certainly result in the recognition of cases in which the imprint of the anæsthetic in a more or less definite form remains upon the nervous system for days and weeks after the more prominent evidences of the action of the drug have passed away.

# THE TREATMENT OF TETANUS BY AMPUTATION.

IN recent numbers of the THERAPEUTIC GAzette there have been reported a number of cases of tetanus treated by amputation, some successful, others not so; but without exception the operators have, under proper restrictions. appeared to favor this procedure. Berger's contributions to this subject are perhaps most striking, and, in so far as limited statistics are of value, would seem to show quite positively the advisability of practising amputation. Verneuil (than whom no one has studied the question more thoroughly) publishes an important communication in the Gazette Médicale de Paris for June 10, 1893, in which he records some unsuccessful cases, and puts himself positively against the idea that amputation will have any marked effect upon the prognosis of tetanus, once developed. Indeed, he goes farther than this, agreeing with Poncet, of Lyons, that far from curing or even mitigating the violence of the disease, a major operation of this kind seems to distinctly stimulate it, changing it from the mild and chronic form to one extremely acute and rapidly fatal. In Verneuil's paper cases are cited in which amputation was performed before the appearance of tetanus, either because of the severity of the original injury or because of consequent sloughing and gangrene, yet tetanus subsequently appeared and ran a rapidly-fatal course.

One case is particularly interesting, as tending to disprove the basis upon which amputation is advised,—that is, the belief that this operation enables the surgeon to remove the focus of infection.

A young woman entered the hospital on the 16th of March with a contused wound of the This was carefully cleansed, closed, and received a dry dressing. Two days later the wound was thoroughly disinfected, some sloughs and shreds of cloth were removed, and a wet dressing was applied, combined with daily immersion for one hour in carbolic solution. treatment was continued for ten days. was very slight discharge and the wound appeared healthy. On the eleventh day of this wet dressing, and the thirteenth after her injury, the patient exhibited slight trismus. Two days later the symptoms were so marked that there was no further doubt about the diagnosis. The forearm was amputated, and the patient was given morphine and chloral in full dose. the day of operation eighty cubic centimetres of antitetanic blood-serum were injected by Roux, though this surgeon stated that neither his experience with animals nor his trials in the human gave him any hope as to the beneficial effect of the treatment. Death followed in less than twenty-four hours after the operation from acute tetanus.

Roux very carefully examined the amputated hand, but was unable to find the tetanus bacillus.

Verneuil does not hesitate to say that the antitoxine injections are simply a second edition of Koch's lymph, and will be found equally futile in therapeutics.

His communication is of great interest and importance, as tending to prevent the adoption of extreme measures until their value is much more definitely proved, and it also affords comfort to surgeons who have possibly felt that they were not doing their full duty by tetanic patients in not securing for them the anti-The early reports of this treattetanic serum. ment were favorable. The investigators seemed to have carried the treatment beyond the experimental point and to have proved the serum of such value that it should be used in every When men of the standing of Roux and, Verneuil express their disbelief in this method, a disbelief founded upon trial, it again puts. the matter in the experimental stage, and frees. the surgeon from all responsibility as to its. THE USE OF MILK IN BRIGHT'S
DISEASE.

LTHOUGH it is true that many physicians A have widely divergent views as to the diet which certain cases of Bright's disease should receive, and while some of them insist very strenuously upon an absolute milk diet, there are others who go even farther than this and direct that the milk which the patient receives shall always be skimmed. It is not our intention to discuss the relative values of the various dietetic measures which have been instituted, nor indeed of the milk treatment of this condition, but we desire to call attention to an error which, we believe, underlies the administration of skimmed milk in such cases. main object of all dietetic treatment of Bright's disease is to prevent the ingestion of excessive quantities of nitrogenous material, and theoretically even the nitrogenous principles of milk are harmful. Practically, of course, it is necessary that the patient should receive food containing nitrogen, and milk is therefore used as the best food which we can obtain. If the milk is skimmed, one of the most nourishing principles of it is taken away from the patient, and the part that is taken away contains practically no nitrogen as compared to what remains, and is therefore the part above all others which will do most towards nourishing the patient. We believe, therefore, that whole milk should be given to cases of Bright's disease rather than skimmed milk. It is, however, not to be forgotten that one good reason for removing the cream before giving the milk to such cases is that the fatty material sometimes disagrees with the patient's digestion. can practically always be avoided by the administration of pancreatin or, better still, by diluting the milk until the proportion of fatty material to liquid is so diminished as to make indigestion from this cause an improbability. The milk may be either diluted with plain soda water or Apollinaris, or with Vichy, preferably the two first. The carbonic acid gas seems at once to aid digestion by stimulating the stomach, and perhaps by aiding in the breaking up of the curd.

Reports on Therapeutic Progress.

#### THE ACTIONS OF CHLOROFORM.

In an exceedingly interesting and important communication to the Académie Médecine, bearing upon the long-mooted question of the

action of chloroform, J. V. LABORDE (Bull. de l'Académie de Médecine, July 17, 1893) has endeavored to demonstrate experimentally that the primary accidents of chloroformization such as the arrest of the heart and respirationare due to an essential, predominant action of the drug exercised on the peripheral ends of the sensitive nerves of the nasal mucous membrane,—that is, upon the terminal fibres of the trigeminal. The author has heretofore shown that the vapor of chloroform applied to the nose of a rabbit, or touching the nasal mucous membrane with a sponge charged with the anæsthetic, only produces a special irritation locally. As a consequence of this, there is an immediate stoppage of the lever that is recording the cardiac and respiratory movements. On the other hand, if the nasal mucous membrane is rendered non-sensitive by the application of a local anæsthetic like cocaine, or a general one like opium or morphine, or, again, if section of the trigeminal is practised beforehand, then the arrest of the heart and the respiration no longer take place.

To make the subject more clear, and at the suggestion of Guerin, Laborde, assisted by Rondeau, made the following experiment: Tracheotomy was performed upon a rabbit; a tracheal canula was inserted, through which a tube could be introduced for the administration of chloroform by this means. At the same time a pneumo-cardiograph was so connected with the animal as to transmit upon a recording instrument, by means of a vertical lever which could be seen at a long distance, the movements of both the heart and the respira-Now, when the chloroform was introduced through the tracheal canula, no appreciable effect was noticed on the transmitting lever to indicate alterations in the cardiac and respiratory movements; the animal remained absolutely quiet; it did not stir. On the contrary, when the anæsthetic, by means of a sponge, was administered by the nose, there followed an immediate and complete arrest of the lever; in other words, there was a simultaneous stoppage of the heart and the respira-The animal was allowed to recover, and the experiment repeated with exactly the same results.

Commenting upon the results of such an experiment, Guerin thought that it had been clearly demonstrated that the action of chloroform upon the heart at an early stage of anæsthesia depended on disturbances of the reflexes, disturbances traceable to the nasal mucous membrane; and that, clinically, the disturbances of the nasal reflexes played an

important part in certain instances of respiratory arrest. It is possible that chloroform, which, by acting upon the nasal fauces, produces cardiac paralysis, may also, by affecting the glottis, cause respiratory arrest, although this latter phenomenon has not been demonstrated experimentally. He believed that fatal cardiac syncope generally occurs at the beginning of chloroformization; and, further, that arrest of the heart is by far more dangerous than the suspension of the respiratory function, since the former is almost always a sign of certain death. Le Fort cited a fatal case in support of the danger underlying the disturbances of the nasal reflexes.

[Laborde's conclusions are directly opposed to those reached by Wood and Hare and quoted in the Chloroform Report in this number of the GAZETTE, probably because of the extreme sensitiveness of the rabbit's respiratory mucous membrane and its different nervous mechanism governing respiration and circulation.—Ed.]

#### NAPHTHOLATE OF BISMUTH.

This substance is a neutral brown powder, without odor, not astringent, and insoluble in water, but decomposes in the intestine into beta-naphthol and bismuth.

NENCKI and HEUPPE found it of value in the treatment of cholera, in the dose of 15 to 30 grains a day. Similarly they have employed the tribromophenate of bismuth in choleraic diseases. This preparation is also a yellow powder, neutral, insoluble, without odor, and insipid. It has no toxic action upon the mucous membrane of the alimentary canal. In 100 parts there are 50 parts of tribromophenate and 50 of oxide of bismuth. The dose for adults is from 60 to 75 grains a day, which should be divided into many doses. It is thought that these two substances are singularly efficient intestinal antiseptics.—La Médecine Moderne, June 7, 1891.

SUBCUTANEOUS AND INTRAVENOUS IN-JECTIONS OF SALT WATER.

In the Medical Press and Circular for June 7, 1893, RITTER VON HACKER contributes an article to the literature of this subject.

There are two methods of introducing fluids into the organism, the one subcutaneous, the other intravenous, both having been severely criticised and warmly advocated, more especially during the recent epidemic of cholera. The utility of injection, however, in many dis-

eases besides cholera, such as great loss of blood, etc., has been recognized for some time past, but the manner of introducing the fluid has drawn forth a diversity of opinion. The intravenous was first used in acute cases of hæmatic change, such as puerperal and surgical anæmia, with apparent success, after Kronecker and Sander had demonstrated on animals the beneficial effect after injections by the vena media and the saphena. The physiological conditions on the circulation instantly arrested mechanical death by hemorrhage, which had led to rapid depression in the blood-pressure, sudden ischæmia, and destruction of the vital centres. Judging from the beneficial effects, similar results would be obtained in man. Great improvement in many of these cases so near the end took place, and the opponents of the method could not deny that success was fre-The author recollects the first case he conducted in Nothnagel's clinic, and believes that in the first intravenous infusion of salt that was tried in Austria the ultimate result was not crowned with success, as could hardly be expected. It was a severe case of hemorrhage from an ulcus ventriculi, the collapse threatening to be fatal. After injection he recovered, however, but a second attack of hemorrhage was fatal. The section revealed a large rodent ulcer of the arteria lienalis. From this period injections of salt and water have gained in favor.

After the practice of direct injection into the veins had been established, a more innocent and probably easier method was advocated by Michael,—viz., the subcutaneous method. It was proved that this form of injection into the tissue obviated the danger of rapidly filling the vessels and producing death. Sahli carried out the latter method of treatment in other pathological conditions, such as uræmia, typhus, etc.

The recent cholera epidemic has stimulated the activity of therapeutists to the practice of both these methods, in whose hands they have assumed what might be designated party names, the subcutaneous being that practised and advocated by Cantani and Samuel. Cantani claims to have used this form of treatment, under the name of "hypodermoklyse," during the epidemic of cholera in Italy in 1884. The intravenous injection of salt water is associated with Hayem's name, who claims for it a superiority over the hypodermic method.

The object of both methods in cholera is to rapidly supply the circulation with the necessary saline fluid which is supposed to be deficient and the cause of rapid death. By either of the methods improvement cannot be

denied: the circulation is increased, diuresis established, and the easy removal of the cholera toxine favored. At the present time all are agreed that an injection of salt water in cholera will reduce the pulse and temperature, but it is yet doubtful how the fluid acts on the toxine of the cholera bacillus, although the facts obtained from the late Hamburg epidemic prove it to be a powerful restorative remedy in imminent fatal cases. Whether subcutaneous or intravenous, the same conditions are fulfilled,-viz., the providing of fluids in the arid tissues. Schede, of Hamburg, is in favor of subcutaneous infusion combined with intravenous injection into the centripetal vessels, not concurrent, but in succession. Michael and Kumel have obtained similar successes by subcutaneous infusion, while Lauenstein expresses confidence in the intravenous infusion, and assures us that it is less dangerous than supposed. In hospitals, or where suitable assistance can be afforded, there is no danger with intravenous infusion. According to Ziemssen, no danger is incurred by driving the needle directly into the vein without any previous preparation, as the danger from air is very trifling and almost The failures recorded depend more on the want of experience. For the general practitioner, however, the subcutaneous infusion may be the most easily accomplished. The statistical results of the Hamburg epidemic are conflicting, and therefore cannot be relied upon for deciding the best method at the present time. It is generally accepted, however, that the subcutaneous is easy to manage and within the ready control of the practitioner. At the beginning of an epidemic the mortality is usually greater than later on, hence the difficulty of drawing conclusions. The report of Dr. Jolasse on subcutaneous and intravenous infusion gives us of the former 104 cases; of which 92 died and 12 recovered, making 11.5 per cent. recoveries. In the latter, 167 cases are given; 130 died and 37 recovered, leaving a percentage of 22 recoveries. Schede records 58 cases intravenous, with 25.8 recoveries, thus giving considerable favor to the intravenous over the subcutaneous treated by themselves. Other operators, however, such as Eisenlohr, obtained thirty-three per cent. recoveries by the subcutaneous method.

This method might be properly described first in its relation to cholera, for which it has been lately applied. It is simple in arrangement and easy to perform with a Pravaz's injection, although a larger quantity of fluid is introduced. The hands, instruments, and apparatus must be all well disinfected before commencing the

operation, the hands being freely washed with soap and warm water, and afterwards held a minute in a two-per-thousand sublimate solution, or a three-per-cent. carbolic. The usual part for injection is the abdomen, which should be well rubbed with sulphuric ether by Bruns's wadding, then followed by a two-per-thousand sublimate or a three-per-cent. carbolic solution. The manner of sterilizing the apparatus must vary with the material used, but the safest method would be to boil them half an hour before use, afterwards dipping them in a oneper-thousand sublimate, eighty-per-cent. alcohol, or a solution of carbolic acid for a minute. The whole may be easily sterilized in the usual apparatus, if such be at hand: the necessary articles are a needle or fine trocar, india-rubber tube, and a syringe to drive in the solution. The lumen of the needle should be one and a half to two and a half millimetres in diameter. and it should have several side openings, allowing the fluid to pass in all directions among the tissues. It may easily be performed with small trocars, such as those used by Cantani, Frantzel, or Billroth. Professor Ewald, of Berlin, practises the operation with a simple trocar. the end of the canula is fitted a gum-elastic tube, through which the trocar is inserted and pushed into the cellular tissue. After this it is slightly withdrawn, allowing the fluid to pass in while the elasticity of the gum catheter contracts on the trocar, preventing the admission of air. Cantani's trocar is certainly more suitable for this operation, and being metal throughout, can be boiled and thoroughly disinfected with reagents. The construction of this instrument is similar to Billroth's for performing thoracotomy. The gum-elastic tubes should be made of reddish-brown caoutchouc. This material is easily disinfected, half an hour's boiling being sufficient. If boiling be not practicable, such tubes should be kept in disinfected fluid, as a five-per-cent. carbolic, for two or three days at a time, repeating this operation every fourteen days for a few weeks. Neglecting thorough disinfection, Simmond, of Hamburg, has recorded several cases where phlegmonous inflammation occurred in the abdomen after a subcutaneous operation. It is advisable to keep the needles and drainagetubes in separate solutions before immediate The next preparation is the entrance of the fluid, which can be best effected by a glass reservoir elevated as an irrigator. Syringes are objectionable, owing to the difficulty of ex-Nothnagel and Kahler recomcluding air. mend glass burettes, but a vessel is easier disinfected and safer to move about, and the heat

longer retained than in long burettes. Cantani's apparatus closely resembles the irrigator, but may be divided into two parts by a metal connection; the internal section contains a thermometer and a solution heated to 39° or 40° C.

The composition of the infusion itself is not so easily determined. Cantani recommends, and Nothnagel and Kahler support the opinion, that two litres of distilled water should contain six grammes of carbonate of sodium and eight grammes of the chloride of sodium. It is proposed that the chemist have three grammes of the one and four of the other prepared in packets, which should be well disinfected and ready for the prompt requirements of the practitioner: this would suffice for one litre of water. Too much care cannot be exercised in having the material as pure as possible. Lauenstein, of Hamburg, has shown how much impurity exists in many of the compounds after he has sterilized and filtered them.

The region of the body for subcutaneous injection is preferably located in the trunk, and more particularly in the ileo-costal, inguinal, and infraclavicular portions, although the inner side of the arm has received many The supraclavicular region and advocates. neck should be avoided, as cedema of the glottis might produce dangerous suffocation. intrascapular region is also recommended, and might be a very suitable situation in cholera cases were it not for the water that oozes out when the patient is laid on his back, making the bed very uncomfortable. The greater number prefer entering by two different parts of the body. The needles should be well pushed forward in the first instance, and then slightly withdrawn to aid the introduction of The wound should then be closed the fluid. with iodoform plaster or collodion.

The quantity injected, according to Sahli, should be one to two litres in from five to ten minutes. Cantani recommends that in cholera it should never exceed one and a half litres. It may, therefore, be safely affirmed that one litre in the same time should be inserted, and if two needles are used, half a litre through This applies more especially to the asphyxia stage of cholera; when below this point eight hundred cubic centimetres may suffice, and in the typhoid stage five hundred cubic centimetres. As a general rule, this infusion must be repeated every four hours, until the pulse begins to rise, the breathing becomes freer, the cyanosis disappears, and the secretion of urine commences. With respect to the temperature, Cantani considers that the solution should be from 39° to 49° C. when the phenomena of cold and paralysis supervene; in the typhoid stage, 37° to 38° C. Samuel prefers injecting fifty cubic centimetres in the minute, after an interval of one minute another fifty cubic centimetres, and so on till the pulse becomes sensible; then he reduces it to every five minutes. If the pulse becomes stronger, every half-hour, and so on till free urination occurs. If a reappearance of the symptoms occur, the operation is repeated. The usual quantity throughout a case varies from eight to twelve litres.

The apparatus in this method are similar to those used in the subcutaneous, with a difference that only one needle is used, and, instead of it being of metal, it is usually of glass. After the vessel has been reached, its direction is centripetal. The veins of the extremities are usually selected: in the arm, the vena mediana; in the leg, the vena saphena. The vein that can be easily approached from the surface is the more suitable for this operation. The hands and instruments are disinfected after Für-An incision several centibinger's method. metres long is made through the skin; the veins separated two to three cubic centimetres wide to allow of Dechamp's artery needle. Three silk ligatures having been well disinfected by boiling an hour in a five-per-cent. solution several times, one of these is placed on the peripheral line of the vein; the central end may be loosely tied or caught with forceps. A V-shaped section is taken out of the vessel, leaving the base towards the centre; the end is caught with forceps, and the canula, through which some of the solution has been passed, is then introduced into the vessel, and the ligature applied over the canula and vein. forceps or loose ligature in front of this is next removed, and the fluid allowed to pass into the vessel. Care must be taken to have the apparatus working before introduction, in order to prevent admission of air. The vessel containing the infusion should be elevated a half to a metre above the site of operation. Any of the foregoing instruments may be used for the intravenous infusions, but the glass irrigator of Gartner is preferable. The author prefers Erlenmeyer's flask. When a sufficient quantity has been introduced,—one and a half to two litres,—the clamp is applied to the india-rubber tube, the ligature in front of the canula tightly tied, and the canula withdrawn, the vein being cut away with the canula and the wound closed. Less time is required in this operation than the subcutaneous, the influence is more rapid, but the dangers are increased.

Hayem recommends the following infusion:

Aquæ destill., sterilizat., 1000 grammes; Chloride of sodium, 5 grammes; Sulphate of sodium, 10 grammes.

In cholera he has introduced two to two and a half litres of this fluid in a quarter of an hour: a single injection sometimes suffices. If the pulse becomes thread-like, a second is re peated, which may occur at the end of ten or twelve hours. The effect on cholera cases, as well as those of hemorrhage, is marked improvement in pulse, breathing, and cyanosis. patient may sometimes experience during or immediately after the operation a rigor; the temperature, if abnormally high, will be reduced; if low, raised to the normal point. The fatal results in animals warns us to be cautious in the rapidity of injection; but in cholera the low conditions of the circulation warn us of a small quantity of blood, which instantly requires repair; but if the stream be too sudden and the quantity great, the salt solution may have the effect of paralyzing the heart or producing pulmonary ædema. Professor Gartner on this account recommends the introduction of half a litre every quarter of an hour. may be considered a surgical operation, and requiring more care than the subcutaneous, but one that the practitioner should be prepared to meet in a cholera epidemic.

#### METHYLENE BLUE IN THE MALARIA OF CHILDREN.

In an elaborate article, CLEMENTE FERREIRA (Bull. Génér. de Thérapeutique, June 15, 1893), after summarizing the history of methylene blue, gives interesting details of twenty-one cases of malarial poisoning of children in which the drug gave excellent results. The author concludes as follows:

- 1. Methylene blue is an efficacious agent in the treatment of malarial poisoning in children.
- 2. The drug is of great service, especially in obstinate and prolonged cases which have resisted the action of other medicaments.
- 3. Its employment is likewise of benefit in young children suffering from the intermittent or remittent forms of the disease, unaccompanied by phenomena so serious as to place in immediate danger the life of the little patient. It may be added here that in those pernicious types of malaria which do not yield even to large doses of quinine, it is not wise to resort to the exclusive use of methylene blue; but to the administration of the latter drug may be associated the occasional injections of the bichlor-

hydrate of quinine, when the action becomes much more energetic and prompt.

- 4. Methylene blue is perfectly well borne by children; it produces in them neither vomiting nor diarrhæa, and the little patients take it easily, which is an advantage over quinine.
- 5. Methylene blue exercises a decided action on the malarial germs and on the paludal process of infection, proved by the fact that the characteristic bodies in the blood disappear, together with the phenomena of increased volume of liver and spleen.
- 6. The drug in question acts undoubtedly on the pyretic element, but the effects produced are far less pronounced than those caused by antipyrin. It is, therefore, a feeble antithermic and of no value in hyperthermias.
- 7. Methylene blue may be administered to children of all ages, without inconvenience, in varying doses, and according especially to the degree of obstinacy and resistance of the infection. The march of the disease and the appreciation of the effects produced are the chief guides, in the majority of cases, for the administration of the medicament. Its use must be continued for a few days after the disappearance of the fever and all other symptoms, in order to avoid relapses so common in the intermittent fever of children.
- 8. Methylene blue deserves to be largely employed in the treatment of malarial poisoning of children. Its efficacy has been demonstrated by instructive observations. In malarial regions it should be tried particularly to combat the infection, often rebellious to other useful medicaments and measures.

#### THE ACTIONS OF CHLORALOSE.

The actions of this medicament, contained in a recent work of MARAGLIANO, and presented to the Académie de Gênes, are briefly reviewed (La Mèdecine Moderne; Les Nouveaux Remèdes, June 24, 1893). The drug generally produces sleep in half an hour after its administra-The sleep is peaceful and destitute of dreamy visions. The sensibility to pain during sleep is modified by the size of the dose employed. The reflexes are increased. The pulse is not altered in any manner, and no effects are produced either on the temperature or the respiration. The digestive tract remains intact. Under the influence of chloralose the nervous symptoms manifested lead to the determination of latent neuropathies. The vascular phenomena caused by the drug are those of a vaso-motor character, dependent upon an action on the nervous mechanism. There is

produced a constriction of the peripheral vessels, this action being proportionate to the degree of the hypnotic effect caused by the agent. Chloralose can be administered in doses of 10 centigrammes, to be increased according to individual susceptibility, and until the desired effect is produced. It has no cumulative action. For females the doses must be comparatively small.

Morselli employed the medicament in twelve neurasthenic cases. Women were quite susceptible to the action of chloralose. To obtain a good hypnotic effect in neuropathies, it was found necessary to increase the dose rapidly,—from 25 to 50 centigrammes. The variability of action of the drug was extreme, but its alleged peculiarity of revealing latent neuropathies was not observed.

Mosso has experimented upon the lower animals with both chloralose and parachloralose. Contrary to the statements of Richet, he found the latter medicament quite active. It paralyzed frogs, but the reflexes remained intact or were even increased. In dogs, large doses of the agent produced a diaphragmatic respiration, and a primary increase, followed by a secondary diminution, in the rate of the pulse. The temperature was quickly lowered, but after awakening of the animal it went even above the The blood-serum was colored with normal. methæmoglobin, and hæmoglobin was found in the urine. Sensibility remained intact, and the reflexes were increased. The conductibility of the nerves was not affected, even late in the poisoning, neither was there any alteration in the electrical muscular contractility.

It is thought that these differences of opinion must be attributed to impurities of the medicament employed. The singular property of the drug, however, pointed out in these researches, as observed by P. Marie and confirmed by Maragliano, is that of "revealing (bringing into prominence) latent neuropathies." It may be said, with the latter author, that "chloralose has a great future, not only from a therapeutic point of view, but also as a powerful reagent of the nervous system."

#### CARBON DIOXIDE IN WHOOPING-COUGH.

A. Bergeon (Lyon Médical, June 25, 1893) calls attention to the fact that since 1887 he has treated whooping-cough successfully with rectal injections of carbon dioxide. He relates the case of his own child, three years of age, in whom the treatment gave the most satisfactory results. The author is supported in his method by the experience of Girord, who has observed

the good effects of the gas in the disease under consideration in his own case as well as in those of his two children, a boy and a girl, seven and three years of age respectively. He confirms in every point the observations of The method of this latter investi-Bergeon. gator is as follows: Immediately after an access of the malady, he administers, in the form of a rectal injection, about two litres of carbon dioxide mixed with a few centigrammes only of pyridin. The child can take food after the operation, since this causes no disturbances of the digestive tract. The injections can be repeated after each access of the cough, and even at night, with intervals of four hours. The author has performed the operation in very young children five and six times in the twenty-four hours. He affirms that the worst cases yield to the treatment in a week at most: exceptionally does the disease enter in its second week.

#### ABOUT BOILED MILK.

In a recent communication to the Société de Médecine de Lyon on the above subject, Crolas (Lyon Médical, June 25, 1893) concludes,—

- 1. That the process of boiling the milk relieves this article of food of small quantities of butter, which, mixed with albumin, is found in the skin that forms over the milk on cooling.
- 2. That boiling has no action whatever on the caseine or the lactose, these principles remaining the same after as before the boiling.
- 3. That boiling increases the quantity of the soluble phosphates, this appearing to show that boiled milk contains a larger amount of phosphoric acid ready for assimilation.

Crolas, therefore, believes that boiled milk, as an article of food, is equivalent, if not superior, to non-boiled milk.

#### INJECTIONS OF CAMPHORATED NAPH-THOL IN THE TREATMENT OF TUBERCULAR ADENITIS.

A propos of a new communication by Reboul in regard to seven cases of tubercular adenitis in which excellent results were obtained by the use of the above medicament, Nélaton reports another similar case to the Société de Chirurgie (L'Union Médicale, July 1, 1893), in which the same good effects were observed from the injections of camphorated naphthol. The patient was suffering from a generalized tubercular adenitis on both sides of the neck. The injections of the camphorated naphthol brought

about an almost complete cure, and after a year's treatment only traces of the diseased glands could be observed.

# THE CARBONATE OF BEECH-CREOSOTE IN THE TREATMENT OF TUBERCULOSIS, AND ESPECIALLY OF PULMONARY PHTHISIS.

In an interesting article, EDMOND CHAUMIER (Journ. des Sciences Médicale de Lille, June 9, 1893; Gazette Médicale de Paris, July 1, 1893) details eight cases of tubercular disease in which the most excellent results were obtained from the employment of the carbonate of beechcreosote. The medicament has a slight odor of creosote, and an insipid, oily taste, resembling that of tar. The new preparation is insoluble in water, but soluble in absolute alcohol, and contains ninety-four per cent. of creosote. Patients take the drug easily. may be administered in capsules or in emulsion. For children, the dose is from 1 to 6 grammes; for adults, 10 to 15 grammes. can, however, be given in larger amounts.

The carbonate of creosote is eliminated partly by the urine. In most cases this liquid becomes of a brownish, smoky, or greenishblack color, and acquires the odor of the drug. In one case the change of color in the urine was observed on the first day of the administration of the medicament. The remedy can also be detected in the breath, a proof that it is eliminated also by the lungs. The carbonate of creosote produces no untoward effects, such as irritation of the stomach or the intestines. It does not provoke diarrhoa generally, although many patients complained of this trouble during the treatment.

Among the first good effects of the creosote carbonate are an improvement of the appetite and an increase of the bodily strength. These effects are followed by a diminution of the cough, and later of the pulmonary lesions. Pari passu with these good results there occurs an increase in bodily weight often quite marked. Thus, for instance, a girl, six years of age, who, from the 4th of February to the 4th of August, had only gained two pounds, obtained, from the 4th of August to the 5th of September, four pounds under treatment by the carbonate of creosote. In one month she had gained more than a healthy child in a year. The girl practically recovered shortly afterwards. Almost all traces of the lesion had disappeared; she had not coughed by the beginning of November, and by the 14th of the following January she had gained eight pounds,—that is, almost

three times as much as a healthy girl six and a half years of age. Another girl, twenty years of age, gained twelve pounds from the 14th of November to the 21st of January; and a third one, fifteen years of age, gained seven pounds from the 20th of August to the 18th of October,—that is, in the course of two months. this last case the pulmonary lesions disappeared completely. A very rapid amelioration was noticed in one case in which the pulmonary hemorrhage became so serious as to threaten the life of the patient. Two cases of acute pleurisy are described. In one of them the effusion disappeared by the seventh day; in the other case by the thirteenth day. This last case was that of a child thirteen years of

According to the author, the administration of the new remedy must be conjoined with the application of hygienic measures, otherwise the use of the drug is apt to be attended with utter failure. Good ventilation and nutritive food are indispensable in these cases. The carbonate is destined to replace the creosote itself in the treatment of tuberculosis. It may be added that, since the writing of the article here abstracted, Chaumier has also employed the carbonate of creosote in hypodermic injections, in doses of 5 cubic centimetres. These injections, the author affirms, are not painful.

# THE PROPERTIES AND ACTIONS OF THE METHYLAMINES.

COMBEMALE (Bull. Génér. de Thérapeutique, March 30 and April 15, 1893) has published an experimental study of the actions of the methylamines, from which the following abstracts are taken:

I. Monomethylamine.—This body is represented by the formula of NH(CH<sub>2</sub>). It is a gas which at a few degrees below zero liquefies, has an ammoniacal odor, and a strong alkaline reaction. Monomethylamine is the most soluble of known gases. At 12° a volume of water dissolves 1150 volumes of the gas; at 25°, 960. The aqueous solution possesses the odor of the gas, this disappearing entirely on boiling the solution. From experiments performed on six dogs and a guinea-pig interesting results were obtained. The drug was administered once only by the stomach; it was usually given hypodermically. The fatal dose was found to vary from 10 to 15 cubic centimetres per kilogramme of the body-weight. Death took place, in these instances, in from twenty-four to fortyeight hours, and was usually preceded by hæmaturia. Five centigrammes of monomethylamine

per kilogramme of the body-weight proved fatal to a dog, but this animal had been used for previous similar experiments. Excessive congestion of the kidneys and the liver (less marked in the latter) was the most constant post-mortem lesion found. Hemorrhagic points were noticed all along the small intestine, especially in the neighborhood of Pever's patches. The valves of the heart were reddened as if an endocarditis had previously existed; infarcts were also observed in the lungs. The brain presented a pale appearance. The following conclusions are reached: 1. Locally, monomethylamine is a powerful irritant, producing tissue necrosis. 2. On the general economy the drug produces bloody extravasations in the kidneys, liver, heart, and intestines, this general action being accompanied by variations of the central temperature, and more or less by sialorrhœa and albuminuria. To obtain the local effects described, a 1-to-250 solution is required; for the general action, the dose should be below 10 centigrammes per kilogramme of the body-weight; a higher quantity is sure to cause death.

2. Dimethylamine.—The formula of this substance is given as NH(CH<sub>2</sub>)2. It is also a gas, readily soluble in water, of a strong ammoniacal odor, and exceedingly alkaline in reaction. At a low temperature it liquefies, and its general properties are similar to those of monomethylamine. The results of a series of experiments led the author to formulate these conclusions: 1. Given by the stomach, in doses of from 5 to 10 centigrammes per kilogramme of the body-weight, or in solutions of the strength of 1 to 300 or 1 to 1000, dimethylamine produces no marked effects. 2. Hypodermically, (a) the drug acts as a powerful caustic, causing marked scars, even in solutions of the strength of 1 to 200; (b) the minimum fatal dose is 20 centigrammes per kilogramme of the body-weight; (c) the initial fall and the subsequent rise of the bodily temperature are neither constant phenomena nor proportional to the dose employed; (d) the most constant effect is an increase of the salivary secretion and of the normal alkalinity of the saliva; (e) dimethylamine is partly eliminated by the kidneys, the irritant substance excreted bringing about a congestion of these organs. The latter phenomenon is often accompanied by an intense hæmaturia or by albuminuria.

3. Trimethylamine.—The formula of this substance is set down as N(CH<sub>3</sub>)3. It is a gas at ordinary temperatures, but below these it also becomes a liquid. The odor of trimethyl-

amine resembles that of ammonia and putrid fish: it has a decided alkaline reaction, and is readily soluble in water and alcohol. methylamine is also found in the vegetable kingdom, particularly in the leaves of the Chenopodium vulvaria, in the flowers of Cratagus oxyacantha, in ergot, Secale cornutum, and in The drug has been ob-Sorbus aucuparia. tained similarly from the animal kingdom, especially from the herring, cod-liver oil, the blood and urine of man, and from animal oil. Its action has been studied by other investigators; but, according to Combemale, the physiological effects of trimethylamine may be summed up as follows: 1. No matter how ingested, the most constant effect of the drug is the immediate hypersecretion of saliva, accompanied by an increase of the alkalinity of this Sometimes the secretions of the nasal mucous membrane and of the lachrymal gland are also increased. Another common effect is albuminuria, this appearing a few days after the administration of the drug. 2. Injected hypodermically in aqueous solution of the strength of 1 to 100, trimethylamine acts as a powerful caustic, producing ulcerations that 3. In solutions of the heal with difficulty. strength of 1 to 200, or in doses of about 3 centigrammes per kilogramme of the bodyweight, trimethylamine lowers the temperature. This hypothermia, which can also be produced when the drug is given by the stomach in doses from three to seven times as large, is not constant. 4. In all instances, trimethylamine, in higher doses than 2 centigrammes per kilogramme of the body-weight, causes an increase in the pulse-rate.

A comparative study of the actions of the three methylamines justifies the author in concluding that the toxic, local, and general actions of these bodies are less marked in proportion to the number of the methyl radicals found in their respective chemical formula. The rôle played by the number of radicals in the intensity of the physiological effects of the methylamines has been overlooked and deserves serious consideration.

LOCAL APPLICATION PER RECTUM OF ALOIN, CATHARTIC ACID, COLO-CYNTHIN, AND CITRULLIN AS LAXATIVES.

Kohlstock (translated from *Pharmaceutische Post*, p. 1249, 1892) has instituted experiments in the clinic of Professor Senator, at Berlin, respecting the subcutaneous and rectal employment of cathartics. The investigations were confined to four vegetable substances,—aloin,

cathartic acid from senna, pure colocynthin, and citrullin. Subcutaneous introduction proved extremely painful. The author then essayed with happier results the rectal application of the substances mentioned.

The medicaments were dissolved in the appropriate media, and injected into the bowel with the aid of a glass syringe containing ten cubic centimetres. Aloin and cathartic acid proved to be adapted to the milder cases, colocynthin and citrullin to habitual constipation. Aloin is the mildest, citrullin the most energetic agent. The aloin was first applied in a glycerin solution. The quantities of glycerin thus injected simultaneously were, however, too slight to account for the cathartic action as due to the glycerin. The action, moreover, persisted when subsequently, in accordance with H. Meyer's suggestion, the aloin was dissolved in formamide. The solution employed was of the following composition:

> Aloin, gr. xv; Formamide, zii.

A dose of 4 to 5 grains is sufficient to bring about certain results in all cases of mild constipation. Cathartic acid yields certain results in doses of 6 grains. It is administered as follows:

Acid. cathartinic. e senna, gr. iii; Aq. dest., gr. vii; Natr. bicarb. ad react. alkalin., q. s.

For more stubborn and habitual constipation, colocynthin, in doses of .or to .o4 grain, as well as citrullin, should come into requisition, the latter acting vigorously in doses of .o2 grain even in aggravated constipation. Prescribe—

> Colocynthin, gr. i; Alcohol, gr. xii; Glycerin, gr. xii.

Or,

Citrullin, gr. ii; Alcohol, gr. xlix; Glycerin, gr. xlix.

The following properties are common to all these agents when applied per rectum: On the bowel itself they do not produce the slightest irritation, hence the patient is spared the torturing tenesmus which not seldom follows the glycerin clyster. In most cases a passage ensues pleasantly; severe abdominal pains are very rare. The evacuations are very copious, and in this respect materially surpass those produced by injections of glycerin, for glycerin causes depletion of only the lowest portions of the bowel. The agents in question leave be-

hind no tendency to constipation. On prolonged use, indeed, a certain habituation supervenes. At such times, however, a very slight increase of dose suffices. Disturbing collateral effects were not perceived. The urine always remained normal.—Les Nouveaux Remèdes.

#### EXTERNAL TREATMENT OF DIPH-THERIA.

In L'Union Médicale for June 3, 1893, SIMON, in a clinical article, announces his success in the external treatment of diphtheria. He employs to the area which is involved the following topical application:

Salicylic acid, gr. xv;
 Infusion of eucalyptus,
 Glycerin, of each, 3iss;
 Alcohol, enough to make a solution.

After this has been thoroughly applied to the affected area he paints the part with a solution of perchloride of iron and glycerin in equal parts. Along with this treatment he also institutes irrigation of the mouth and nasal cavities, using in each instance boric acid and water, or a 1-to-100 solution of carbolic acid and water. He also thinks it useful to employ the vapor of a decoction of eucalyptus leaves or atomization of thymol and water. Where there are fissures and cracks of the lips or gums, or if a pseudo-membranous inflammation has passed by, he obtains rapid healing through the use of the nitrate-of-silver stick applied daily lightly to the surface. If cutaneous inflammations follow diphtheritic inflammation, he employs tincture of iodine or an alkaline solution of iodoform.

#### PRESCRIPTION FOR INFANTILE CON-VULSIONS.

Simon advises the following treatment in infantile convulsions:

First empty the alimentary canal by the use of a laxative and by the employment of emesis. Should the attacks then continue, inhalations of chloroform or ether should be given on a handkerchief, and a teaspoonful of the following mixture should be given by the mouth and rectum every three-quarters of an hour:

P. Hydrate of chloral, Bromide of potassium, of each, gr. xv; Syrup of codeine, gtt. x; Tincture of musk, Tincture of aconite, of each, gtt. x; Orange-flower water, 3iii. In case the attack is severe and prolonged, a hot bath should be advised, and blisters applied to the epigastrium and back of the neck. Care should be taken that antiseptic precautions are carried out in the production of the blisters.—

L'Union Médicale.

#### DIGITOXINE IN HEART-DISEASE.

According to La Mèdecine Moderne for June 7, 1893, Masius has highly recommended to the Royal Academy of Medicine in Brussels the employment of digitoxine in cardiac therapeutics. The dose which he recommends is  $\frac{1}{100}$  of a grain once or twice daily. Under these circumstances the ordinary effects of digitalis are obtained without the disturbance of the alimentary canal.

Van Aubel states that he has found that in doses of  $\frac{1}{100}$  of a grain, when injected subcutaneously, it does not produce inflammation. For hypodermic injection in man he recommends the following:

B. Digitoxine, gr. 1; Chloroform, gtt. xxx; Alcohol, 3vi; Distilled water, 3ii.

This may be used in eighty subcutaneous injections. Digitoxine, when employed in this way, should be absolutely pure and crystalline. The authors believe that by digitoxine we make up the greater part of the active principle of most of the digitalines of commerce. Another advantage in digitoxine is that it acts rapidly, and can be employed where the slow action of digitalis is objectionable.

#### THE TREATMENT OF HEPATIC COLIC.

GRASSET is a firm believer in the administration of olive oil in the treatment of acute and subacute hepatic colic. In the acute form the duty of the physician is to relieve the pain. For this purpose may be employed (1) a hot bath, which shall last from half an hour to an hour and a half; (2) he may administer every hour or every half hour a teaspoonful of the following mixture:

#### R Chloroform-water, 3v; Syrup of orange-flowers, 3v.

In cases where there is vomiting, he advises hypodermic injection of morphine, and by the mouth administers frozen milk or frozen bouillon. When the crisis of the pain is most violent, if the stomach be tolerant, he advises ingestion of small quantities of olive oil every quarter of an hour until half a pint has been taken. The oil may be rendered aromatic by the use of the oil of peppermint. An injection also should be given composed of two drachms of infusion of senna and half an ounce of the sulphate of sodium.

In the treatment of the subacute form, which is more prolonged, of course, he advises (1) ingestion every morning of a wineglassful of aromatized olive oil; (2) every night a hot bath; and (3) every day four doses of from 4 to 10 drops of tincture of boldo; (4) morning and night he orders the administration of the following laxative pill:

Extract of belladonna,
 Euonymin,
 Pulverized belladonna-leaves, of each, gr. ss.

In some cases it is well to supplant the euonymin with podophyllin. (5) Every two hours he administers a glass of milk, and in addition adds to this two tablespoonfuls of Vichy water. In other cases where a laxative effect is desired, sulphate of magnesia is useful.—L' Union Médicale, June 3, 1893.

### TREATMENT OF CANCER OF THE STOMACH.

In a clinical lecture published in L'Union Médicale for June 8, 1893, Peter recommends the following treatment in cases of gastric carcinoma. After dividing these cases into latent, obscure, and evident carcinoma, he recommends that the diet shall consist of milk, or any nutrient liquid which is tolerated, such as kefir; he also believes that rectal injections of peptonized foods are of value. For the pain he believes that the internal administration of opium and the application of irritation externally will often give relief. For the loss of appetite and constipation, which are very frequently associated, he employs tincture of rhubarb, I drachm; tincture of nux vomica, 30 drops; and of this mixture gives 10 to 30 drops after each meal.

If pain follows eating, he adds to this prescription some laudanum. In all cases of gastric carcinoma there is a decrease in the quantity of hydrochloric acid. He thinks it well, for the purpose of aiding digestion and decreasing pain, to prescribe some such mixture as follows:

L. Syrup of lemon, 3ii;
Hydrochloric acid, gtt. x.
Sig.—A dessertspoonful after meals.

If, for any reason, it is believed that there is a condition of hyperacidity of the stomach, then bicarbonate of sodium may be administered.

# THE USE OF CREOSOTE BY RECTAL INIECTION.

The employment of creosote by rectal injection is often advisable, but the difficulty of its administration in this form is that it has to be given in some animal oil, such as cod-liver or neat's-foot oil, and that it is almost impossible to emulsify it properly unless some gummy substance is added. These difficulties have prevented the rectal administration of creosote becoming generally resorted to.

CARLOS has made, however, a very ingenious administration of creosote by the use of saponine of Panama wood. He employs a tincture of Panama wood, and prepares the solution as follows:

B. Distilled water, 3ii; Tincture of Panama wood, 3iii; Pure creosote, 3iiss.

A tablespoonful of this mixture is added to cold water and heated, when it immediately forms a limpid liquid, which is readily administered by injection. This injection, it is also stated, is readily retained and absorbed by the mucous membrane.—La Médecine Moderne, June 7, 1893.

# THE AFTER-TREATMENT OF CATARACT EXTRACTION.

Dr. William Oliver Moore (Medical News, September 2, 1893), on the completion of the operation of extraction of cataract, carefully washes the cornea and conjunctival cul-de-sac with a warm boric-acid solution, in order that all secretions or coagula may be removed. solution of mercuric chloride (1 to 8000) may also be used. The eyelids should then be gently closed, and over them placed a small square of old linen, either dry or covered with oleum petrolei, cold cream, or the like. When the skin is delicate, the oiled cloth is preferable. Small pads of absorbent cotton are now placed over the oiled cloths sufficient in quantity to fill the space between the eyeball and the forehead, so that the pressure of the bandage will be uniform and gentle. This cotton may be medicated or not, as desired by the surgeon. Over this dressing is placed the roller bandage. This is made of fine flannel if it is the winter

season, or of cheese-cloth if it is summer. It should be from one and a half to two inches wide and about three yards in length, applied in the form of the well-known figure 8. As a rule, only one pin is required to fasten the bandage, and this of the ordinary kind. He has never seen a bandage properly applied when one pin was not sufficient to hold it in position, except in the case of women having long hair. It is his custom in such cases, besides using the pin as mentioned, either to fasten the bandage by means of a hair-pin passed through it and into the back of the hair, or to put on an old-fashioned night-cap over the bandage, which keeps it firmly in place. He is fully aware that the bandage is considered by many surgeons as unnecessary, and that bands of water-plaster or any adhesive strap over the eyelids are sufficient. When the bandage is applied, the patient, if in the operating-chair or upon the table, should be gently led to bed, and when in it should be allowed to assume any position which is comfortable and easy. He considers the practice of keeping cataract patients in bed for the first twentyfour hours cruel and unnecessary. patient is restless, the sitting posture may be assumed. He thinks that hypostatic congestion of the lungs may be set up by rigid enforcement of rest on the back.

It is his custom to allow the bandage to remain on both eyes for four hours, unless there is pain, when it is immediately removed, the eyelids bathed gently with a solution of mercuric chloride (1 to 10,000), and the lids cautiously opened. When no pain occurs after the operation and all is quiet at the end of four days, he removes the bandage for the first time and inspects the eyes, first having washed the lids with the mercuric-chloride solution. He thinks the room may be darkened slightly, but that there is no advantage in keeping it absolutely black. If, upon inspecting the eye, no undue redness is noticed, and there is no iritis, a mydriatic need not be used. If, on the other hand, there is any reaction, atropine is instilled twice a day. After the fourth day the bandage need not be reapplied to the unaffected eye, but the eye should be shielded with a shade. On the eighth day the bandage may be removed entirely. In cases in which pain occurs, and in those in which, on removing the dressing, pus is found on the linen pad, purulent infection is suspected. If the wound is sloughing, the eyes are carefully cleansed with bichlorideof-mercury solution and the corneal wound cauterized, hot water applications being made every two hours and atropine solution instilled.

### THE TREATMENT OF BLENNORRHŒA

DR. BOERNE BETTMAN (Journal of the American Medical Association, August 12, 1893) writes concerning the treatment of blennorrhœa of new-born infants, the main object of his paper being to denounce the idea which prevails that a two-per-cent. solution of nitrate of silver is specific for all cases of this complaint. He considers that the treatment of the disease does not only consist in using nitrate of silver, but in knowing when and how to use it. The mild form of the disease is readily controlled by cold applications to the lids, and in the second stage by the instillation of a saturated solution of boracic acid every two hours and the daily application to the everted lids and cul-de-sac of a one- or two-per-cent. solution of silver nitrate.

The virulent form requires energetic measures. During the first stage caustics must not be employed. The parts should be cleansed every hour or two with a solution of bichloride of mercury (1 to 5000) and a saturated solution of boric acid. It is only when the purulent secretion is free that the nitrate of silver is indi-If the strength of one or two per cent. does not check the discharge, he gradually increases it, and has used it as high as fifteen per cent. As soon as the swelling visibly subsides and the discharge decreases he uses hot fomentations. If there is ulceration, atropine is instilled, and if the ulcer is progressive in character, it is touched with carbolic acid or the actual cautery.

# EXTRACTION OF PART OF THE CAPSULE AS AN OPERATIVE PROCEDURE IN CERTAIN CASES OF SECONDARY CATARACT.

JOHN DUNN (Archives of Ophthalmology, July, 1893) was consulted by a patient upon whose eye Förster's operation for ripening had been done, followed by extraction and capsulotomy. The resulting vision was bare perception of light. Examination of the eye showed a well-knit corneal extraction scar, a complete upward coloboma of iris, whose edge was everywhere, except perhaps centrally below, adherent to a thick capsule in which there was no opening. In the centre of the coloboma below, viewed from above, there was apparently communication between the anterior and posterior chambers through an opening one-half to one millimetre in diameter. The thickened capsule, however, extended below the iris edge, so that no light entered the eye through this opening.

Dunn considered that a further needle operation was contraindicated, and that the best means of obtaining vision was in section and removal of a square of the capsule. This was done as follows: A sharp capsule-knife was forced through the cornea near its upper edge, and then through the anterior chamber to the iris border below. Two parallel cuts were then made in the capsule from below upward, and these cuts then joined below. The lines of incision were more or less irregular, and some tearing, rather than cutting, had to be done. The result was a capsular flap attached above. No manipulation of this flap could make it give a clear pupillary space. With a small cataractknife, a corneal section three millimetres in length was then made along the upper corneal edge. A pair of iris forceps was next introduced through this wound and the floating flap was seized, with the intention of cutting it off with a pair of scissors should there be any traction on the iris. It, however, came away without trouble, the escape of vitreous not being more than a drop. The eye healed without complication, and vision was equal to onesixth. He thinks the operation of capsulectomy justifiable not only in cases like the one reported, where the iris is everywhere adherent, so far as can be seen, to a thickened capsule, but also in those cases where, following extraction, the capsule is much thickened, the iris remaining free.

THE USE OF GRAFTS OF SKIN AND OF MUCOUS MEMBRANE IN THE TREAT-MENT OF DISEASES OF THE EYE-LASHES AND OF THE LIDS.

DR. H. W. WOODRUFF (Annals of Ophthal-mology and Otology, July, 1893) writes as follows: Since the investigations of Thiersch and others in demonstrating the vitality of grafts of skin, his method has become an essential feature in modern surgery, especially in plastic operations about the face.

The oculist is often confronted with deformities of the eyelashes and of the lids, which may be relieved by the judicious use of these grafts.

For pronounced forms of entropion, the usual methods of operating, as those of Hotz, Arlt, and others, generally suffice; but we often have the condition of partial entropion or trichiasis and distichiasis where there is no incurvation of the tarsus, but a failure of the lashes to grow in a proper direction, or the presence of more than one row.

These lashes may, of course, be removed by

epilation or by electrolysis, methods which experience has shown are not uniformly successful.

Many use strips of skin, splitting the border of the lid and filling the gap with the graft, and this method generally has the effect of turning out the lid border and removing the offending lashes from the cornea. But skin is not mucous membrane, and never becomes such, and very often a graft of skin will keep up the irritation of the cornea even if no hairs are present, and it is not always possible to obtain a skin-graft entirely free from hairs.

In all cases where only a small strip a few millimetres in width is needed, the mucous surface of the lower lip furnishes a good locality for such a graft. The mucous membrane graft, if properly applied, is non-irritating.

The general methods are the same as in all plastic operations.

The essentials to success are the same as in the treatment of any wound: absolute asepsis, complete stasis, approximation of the parts, and rest.

In eight cases in which this method was used all were successful, but in two the effect was not sufficient, owing to the small size of the grafts.

In securing asepsis the usual methods may be employed, not allowing a stronger solution than 1 to 5000 of the bichloride of mercury to enter the eye.

The incision is made along the border of the lid; care must be taken to have it behind all the cilia. It must be made deep and of sufficient length. The lid clamp may then be placed on the lid, and a strip of mucous membrane, slightly larger in all dimensions than the incision, is excised, taking care not to remove submucous tissue with it. This strip is placed in a warm alkaline solution until all hemorrhage has been checked about the lid.

Continuous washing with the bichloride solution, with pressure with a pledget of cotton, will be sufficient. The graft is then accurately approximated, taking care to remove all clots. Lids are carefully closed, and both eyes bandaged. It is not necessary nor advisable to use sutures, as with proper care the graft will retain its position. Bandage may be removed in about three days.

Dr. Woodruff refers to a case of skin transplantation in a man aged seventy-one. He was admitted to the Illinois Charitable Eye and Ear Infirmary with an extensive ectropion of the right lower lid, of two years' duration, due to relaxation of the skin with spasm of the orbicularis muscle. The general health of the

patient was good. The lid itself was somewhat shrunken and could not be raised to its normal position.

An incision was made parallel with the border of the lid and the upper flap drawn up-This made a space about thirty millimetres long and about eighteen millimetres The flap was taken from the inner surface of the arm, about six millimetres larger in all dimensions than the space to be filled. After removing all underlying tissue, it was placed in a warm boric-acid solution until all hemorrhage had ceased. The flap was then placed in position and, where necessary, trimmed with scissors so that it approximated all parts accurately. About six fine sutures were used to hold it in place. A moist bichloride dressing was applied and both eyes closed with a bandage. The bandage was removed on the third day and sutures on the fifth. There was some suppuration of the nasal side of the flap, and a dressing of iodoform was used.

In two weeks the bandage was left off and a solution of bichloride of mercury (r to 5000) used as a wash three times a day. The patient was discharged in four weeks from the time of operation. The graft had shrunken somewhat, but there was no return of the ectropion, and the conjunctivitis, which had been present before, was entirely cured.

#### FORMULAS FOR CONJUNCTIVAL INFLAM-MATION.

DR. EDWARD JACKSON (Philadelphia Polyclinic, August 15, 1893) writes as follows concerning solutions suited to conjunctival inflammations: Among ophthalmic surgeons, solutions of boric acid, with or without the addition of a certain amount of borax, are in constant use for inflammation or irritation of the conjunctiva. The beneficial influence exerted by them is strictly confined to the conjunctiva; in inflammation of the deeper structures of the eye they are useless. A common proportion is—

Boric acid, 3 parts (gr. xii); Distilled water, 100 parts (f3i).

In water at ordinary temperatures, boric acid is only soluble to the extent of about four per cent., and to prevent any deposit, it is necessary to prescribe less than would make a saturated solution. As far as any excess of action upon the conjunctiva is concerned, it may even be applied in the form of powder, provided the powder is sufficiently fine (impalpable), without provoking irritation.

Where borax is added, it may be in the following proportion:

Sodium biborate, I part (gr. iv); Boric acid, 3 parts (gr. xii); Distilled water, 100 parts (f3i).

Borax is much more freely soluble in water than in boric acid, but cannot be used in anything like saturated solutions without causing severe conjunctival irritation.

The addition of the sodium salt to boricacid solution renders the solution very decidedly alkaline. Such an addition increases the cleansing power of the solution and renders it more efficient as an antiphlogistic in cases in which there is any appreciable conjunctival discharge.

These solutions are often spoken of as antiseptics, but they have very little reason to be so called. For any antiseptic effect, probably their most important ingredient—and this may be true of many other so-called antiseptic solutions—is the water they contain.

They are simply cleansing and soothing in their action, and may be used in all cases of conjunctival inflammation with the greatest freedom and without danger of injury. For slight hyperæmia or irritation, indicated by burning, itching, or smarting of the eyes, 5 or 10 drops is usually ordered to be used three or four times per day. Where there is marked purulent discharge, the solution is to be used by the drachm or half-ounce every hour, or so often as is necessary to keep the conjunctiva thoroughly cleansed with it.

The application of such a solution is not followed by any smarting, burning, or increased pain of any kind, but usually by a very notable relief from such sensations. The solution of boric acid is on many accounts an admirable placebo, and it is to be borne in mind when a placebo is required, yet it has a positive soothing and cleansing action.

It answers well as a vehicle for the mydriatics or myotics, although it has little or no power to prevent the growth of the low vegetable forms that are liable to infest such solutions when kept long at ordinary temperatures.

#### EPIPHORA OF INTRANASAL ORIGIN.

DR. WALTER J. FREEMAN (Philadelphia Polyclinic, July 15, 1893) reports a series of cases in which he desires to emphasize the importance of intranasal treatment for the cure of epiphora. These cases consisted of an overflow of tears caused by hypertrophy of the inferior turbinals,

vaso-paretic condition of both inferior turbinals, myxomatous degeneration of the anterior end of the right inferior turbinal, deviation of the septum, and synechiæ between the inferior turbinals and the floor of the internal fossa. They were all cured or relieved by intranasal treatment suited to the lesion present. closing, Dr. Freeman refers to the ease and certainty with which some forms of epiphora are permanently relieved by intranasal surgery, although he sounds a note of warning lest the single symptom of lachrymation be regarded as a signal for instituting nasal treatment without duly weighing coexisting ocular troubles. He very properly refers to the fact that the presence of pus in the lachrymal sac indicates almost unerringly the presence of stricture, and that although the rhinologist can do much to aid the ophthalmologist, such a case is, in other respects, beyond his province.

#### QUININE BLINDNESS.

DR. KASPAR PISCHL (Medical News, July 29, 1803) reports a case of quinine blindness in a man, aged forty, who during an attack of malaria had taken three 10-grain doses of phenacetin and during twenty-four hours 30 grains of quinine. The next morning he awoke totally blind. When examined by Pischl, more than a month after the ingestion of the quinine, his central vision was not far from normal, but his field of vision contracted to a very small area, the optic nerves white, and the vessels diminished in calibre. Marked improvement occurred under the influence of hypodermic injections of strychnine and the use of the constant current, three milliampères, the anode over the eye and the cathode on the neck, for fifteen minutes daily.

# SHOULD A MYDRIATIC BE USED, AS A RULE, IN REFRACTIVE CASES?

DR. J. E. MINNEY (Ophthalmic Record, August, 1893) instituted an inquiry to learn the practice of oculists respecting the frequency with which they used a mydriatic and the kind employed, together with reasons for their practice and remarks on the subject. With this end in view, he addressed letters to twenty-two ophthalmic surgeons in the United States, from whom he received replies. The synopsis of the answers is as follows: Five of the surgeons consulted use a mydriatic in all cases of refraction; two in ninety per cent. or over of their cases; three in twenty-five per cent.; six sel-

dom use it, and six do not use it as a routine practice. Five of the surgeons employ atropine in seventy-five to one hundred per cent. of their cases; seven in sixty-five to one hundred per cent. use homatropine; three do not use homatropine; one uses homatropine and cocaine in seventy-five per cent.; two use cocaine in twenty to fifty per cent. of their cases; and one uses duboisine in some cases. With reference to the kind of refraction, it was noted that one used cocaine in ninety per cent. of presbyopia, and one homatropine and cocaine in ten to twenty per cent. of hypermetropia, while others do not use a mydriatic at all in such cases. It was further developed that a mydriatic was used more in hypermetropia and astigmatism than in myopia. In the practice of Dr. Minney atropine is used, but not as a routine practice.

#### AMERICAN CATHETERS AND BOUGIES.

Gouley (New York Medical Journal, vol. lviii., No. 4) states that the properties of good web catheters may be summed up as follows:

- r. They are thoroughly, but not too thickly, coated with varnish, inside as well as outside, and highly polished; the varnish is pliable, not apt to crack, and resists the action of moist heat up to 212° F.
- 2. In length they do not exceed thirty-three centimetres (about thirteen inches).
- 3. In diameter they vary from two to nine millimetres.
- 4. The distal extremity of their single oval eye is one centimetre from the point, which is smooth and rounded; this eye, in curved, elbowed, and double-elbowed catheters, is generally lateral, but in some of these instruments the eye is superior, corresponding to the concavity of the bend, and in other cases the eye is omitted, the catheter being open at both ends, or, in addition to the eye, the vesical end is open for catheterism upon a whale-bone conductor.
- 5. Good web catheters are firm but pliable, never rigid, from the proximal to the distal end; a web catheter with a rigid vesical extremity is a dangerous instrument, liable to cause false passages in the deeper regions of the urethra.
- 6. The form of the vesical extremity is in accord with its intended uses; straight web catheters are not so safely and easily used as the curved, elbowed, or double-elbowed, the curved form being the most easily introduced into strictured urethræ and in the majority of cases of enlargement of the prostate.

7. The tensile strength of the different qualities of web catheters was ascertained by experiment to be as follows: The breaking strain of an English commercial catheter was forty-two pounds, the breaking strain of an American commercial catheter was fifty-four pounds, the breaking strain of an American lisle-thread catheter was fifty-six pounds, the breaking strain of an American silken-linen catheter was sixty pounds, the breaking strain of an English silk-web catheter was eighty-five pounds, and an American silk-web catheter of best quality was then tested to one hundred and fifteen pounds without breaking, but the varnish was stripped off at each end.

When it is necessary to retain a catheter in the urethra and bladder, the physician should select one which has not been too thickly coated with varnish. The highest grade of catheter is not always the best for this purpose, because in the course of twenty-four hours the urine filters through the internal wall of the catheter, the silk webbing is saturated, swells irregularly, and uplifts here and there the coating of varnish, which soon scales off, while the lislethread, silken-linen, and those silk catheters with thin external coating resist longer the action of the urine, and do not lose their smoothness after being retained forty-eight hours in the bladder. If, however, the interior of all web catheters were thoroughly varnished. and thus rendered impervious to moisture, there would be no irregular uplifting of the surface and no scaling.

The American commercial catheters have lately been much improved in quality, and they may be found very useful in hospital as well as in private practice. Their cost is little as compared with that of the higher grades. A catheter of this kind may be used for a single day and thrown away, or may be repeatedly boiled without injury, and used as long as the surface of the instrument retains its smoothness. These improved instruments are known as "ten-cent catheters."

No catheter whose surface is fissured or otherwise roughened should be passed into the human urethra, because it would not only irritate this canal, but convey therein septic germs. For general use, physicians will find it advantageous to purchase the higher grades of web catheters, because, with proper care, they last long and retain their suppleness and smoothness. After having used an American silk-web three hundred times, its surface was found to be as smooth as at the beginning. The instrument was then retired from active service to be preserved as an illustration of the excellence of

home manufacture. Another American silk catheter was used twelve hundred times by a patient, and set aside only because its surface had become irregular, although it was not cracked.

It is proper to make a few suggestions respecting the kind of care web and soft-rubber catheters require to render their employment safe to patients and easy to physicians:

- 1. All web catheters should be kept at full length and never coiled; otherwise the varnish will surely crack.
- 2. Web catheters should be loosely wrapped in dry antiseptic gauze and preserved in tightly-closed metal cases until wanted for use. After they have been used they should be carefully cleansed, thoroughly dried inside and outside, and then replaced in the gauze and case; or they may be carried in hollow walking-sticks.
- 3. Soft-rubber catheters should be kept at full length, never coiled, and should be wrapped in moist antiseptic gauze and preserved in tightly-corked glass tubes, capable of containing three or four catheters, because exposure to the air leads to rapid oxidation, which causes the instruments to become hard and brittle.
- 4. Before using a rubber or web catheter it should be dipped for a minute in a one-percent. carbolic-acid solution, but not longer, as carbolic acid, even in such a weak solution, acts injuriously upon the varnish of web catheters as well as upon rubber catheters by prolonged contact.
- 5. Before using a web catheter it should be slightly warmed by friction in the hands and by a momentary immersion in warm one-percent. carbolic-acid solution to prevent cracking of the varnish, particularly during cold weather.
- 6. Web and rubber catheters are much injured by fats of all kinds, by glycerin, by saliva, and by vaseline, which, however, seems to be the least hurtful of these lubricants. If used at all, it should be in the smallest quantity,-just enough to very thinly coat the catheter. Some physicians reject not only the fatty but all other lubricants, and think it sufficient to moisten the catheter with warm water. More soft catheters are destroyed by the excessive use of fatty substances than by any of the many other abuses to which they are subjected. Therefore there is need of a lubricant which shall not be irritating to the urethra, and which shall contain no fat and no free alkali to deteriorate the varnish of web catheters and soften rubber catheters. After examining different substances, it was thought that a watery solution of dry soap, with the introduction of some ingredient to add lubricity to its viscidity, would

be likely to answer the purpose. On consultation with Dr. Charles Rice, the chemist of the Department of Public Charities in New York, the following formula for a saponic lubricant was agreed upon:

> White Castile soap, powdered, gr. ccclx; Tincture of quillaja (1 to 5), f3ss; Water, a sufficient quantity. (Product, about 1420 grains.)

To prepare, pour two fluidounces of water into a tared capsule, heat the water to boiling, and add the soap. Continue the heat, and stir until a homogeneous jelly is produced; then add enough hot water to make the contents of the capsule weigh two troy ounces and a half (twelve hundred grains), after which strain the mixture through cotton gauze. Lastly, pour in the quillaja tincture. This mixture, when cool, has the consistence of thick honey, possesses both viscidity and lubricity in a sufficient degree, and is free from any agent likely to be deleterious to the urethra or to the catheter. It may be preserved in an aseptic state in small collapsible tubes. The lubricant may be perfumed, or one per cent. of pure carbolic acid may be added. Among the experiments tried was an addition to the mixture of two drachms of chondrus crispus jelly (National Formulary). This slightly increased the lubricity, while it greatly increased the fluidity of the mixture. It is likely that the cetraria islandica will yield similar

- 7. All web catheters are liable to harden and to be unfit for use in the course of a few years, especially when they have not been in daily use. On the first appearance of the hardening process the instruments should be cast aside.
- 8. Rubber catheters harden and are brittle in about two years, or even sooner, if unused and exposed to the air. But when daily lubricated with fatty substances they seldom last more than three or four weeks, then swell, lengthen, and undergo a process of softening which renders them liable to be torn across during withdrawal, so that often several inches of this deteriorated rubber remain in the bladder.
- 9. After using a web catheter it should be well washed by forcing a stream of water through the instrument, which should then be dipped for a minute into a one-per-cent. carbolic-acid solution, thoroughly dried, wrapped in dry antiseptic gauze, and enclosed in a metal case. The drying process is begun by shaking off briskly the last drops of water from the interior of the catheter, which may then be ex-

posed to 120° F. of heat in a dry sterilizer or in any other way that may be safe and convenient.

ro. Web catheters, even "ten-cent catheters," may be rendered aseptic also by boiling for ten or fifteen minutes, then drying thoroughly in a sterilizer, when they will be ready for use. During ebullition the catheters should not be coiled, but kept at full length and away from the bottom of the boiler. Dry sterilization may be accomplished as well just before using the catheter, but care should be taken to prevent the instrument from sticking to the metal.

11. Inasmuch as some time is necessarily consumed in the drying process, it is more convenient to a patient who is obliged to catheterize his bladder five or six times every twenty-four hours to be supplied with ten or twelve web catheters (No. 9 or 10 of the English scale), and to use two catheters each day, so that the same catheters may be used only once every five or six days. This plan has been pursued by a number of patients, who have all fully appreciated its advantages. In one of these cases, the patient relieving himself eight times daily, the catheters so used were carefully examined seven months after and found unaltered and in the best condition, each instrument having been used about one hundred and forty

American web bougies are made of the same materials as the catheters. They are, therefore, of the same grades,—cheap commercial cotton, flax, and ramie. A cotton olivary bougie Gouley prefers for general use. It is solid, slender in the first three inches of its shaft, and consists of a number of layers braided one upon another and coated with the same varnishes as the catheters, but it is distinguished from other bougies by its vermilion color. It has no ivory tip, is completely coated, and therefore easily rendered aseptic. care of wrapping in gauze and enclosing in a metal tube is needed to preserve the instrument, which should be cast aside if it becomes fissured. It should be slightly warmed before introduction. No fats should be used as lubricants.

Whalebone bougies were used in France early in this century, and also in the United States. Dr. H. G. Jameson (*Medical Recorder*, 1827) spoke well of the utility of whalebone bougies of "the size of a small knitting-needle" in the treatment of urethral strictures. Whalebone bougies are of two kinds: those with olivary point and elbowed, about one millimetre in diameter, to serve as conductors for larger

instruments, and those for dilatation of narrow strictures. The second, also elbowed and olive-pointed, are not over one millimetre in diameter for the first three inches, thence increasing gradually in diameter, so that at five inches they are equal to Nos. 2, 3, 4, 5, 6, and 7 English scale, the set comprising six bougies, as indicated by these numbers. All whalebone bougies require to be thinly coated with carbolized vaseline and preserved in metal tubes, otherwise they become dry and brittle and are soon destroyed by parasites.

## ONE OF THE BEST APPLICATIONS OF IODOFORM IN SURGERY.

According to LANE (Lancet, July 15, 1893), in erasing tuberculous joints where the bone entering into their formation contained cavities, often of very considerable size, he has used iodoform very largely, not so much with a view of inhibiting the growth of organisms in the synovial cavity, but as a firm packing to occupy the cavity in the bone, which would otherwise be filled with blood, and would form a very formidable nidus for the growth of tubercle-bacilli. In such a joint as the knee or ankle, where every particle of synovial membrane can be thoroughly and effectually removed, there is not the slightest chance of recurrence, for the reason that the retention of a drainage-tube for forty-eight hours with firm pressure insures the accurate apposition of living tissues, all blood and other effusions having been driven out through the tube by the pressure of a flannel bandage, firmly applied. Where. however, a large cavity has been left in a bone, no amount of external pressure can influence it, and it must of necessity remain filled with blood and be a source of danger to the individual. Such a cavity he treats in the following way. and up to the present has never known it to fail: An Esmarch's bandage being applied above the joint to control the circulation, the joint is erased, and any cavity in the bone is thoroughly cleared out and the hole carefully dried with sponges. Some iodoform is then washed with 1 to 20 carbolic lotion, and poured on to a piece of lint and squeezed as dry as possible. It is then introduced in masses into the cavity in the bone and stamped firmly in, much as a dentist fixes a gold stopping in a carious tooth, and when the cavity has been completely filled, the surface of iodoform is planed down level with the surrounding bone. The following examples of the treatment are given:

CASE I.—This was a knee-joint in which there was a large collection of tuberculous material between the front of the lower end of the femur and the synovial membrane of the joint above the limits of which it extended. It projected forward so much that the joint presented the appearance of a typical tuberculous synovitis, for which it was naturally mistaken. Finding the synovial cavity healthy, the incision into it was closed and an opening inside made without the limit of the synovial membrane. The whole of the tuberculous material was cleared out from the shaft. A small aperture was found in the front of the bone in the position of the growing line. On enlarging this it was seen that it led into a carious cavity, which comprised almost every bit of both condyles of the femur, but in no place had there been extension through the articular cartilage, though in parts it alone formed the circumference of the cavity. This cavity was cleared out most thoroughly in the manner described, and was plugged with what seemed a very large quantity of washed iodoform. It is now a couple of years since the operation, and the girl possesses a movable joint, which, with the exception of the scar left by the incision, appears as normal and performs its functions quite as well as its fellow. It would be interesting to know how much of the jodoform has been removed and replaced by bone, and how much, if any, still constitutes a portion of her osseous skeleton. At the time of operation an extensive tuberculous periostitis in the pterygoid fossa and its vicinity was cleared out as effectually as possible, and the abscess cavity was filled with glycerin and This, though improved by the iodoform. operation, continued to discharge till quite recently.

Case II.—This was a case of tuberculous disease of the ankle-joint. The subastragaloidjoint was free from disease, but the whole of the cartilage was destroyed on the opposing surfaces of the tibia and astragalus. The astragalus was so much destroyed that after removing the carious and softened bone little was left but a cavity whose wall was formed in great part directly by the articular cartilage covering the head, under surface, and malleolar facets, and in part by the same tissue covered by a thin layer of bone. Elsewhere the remainder of the cavity was formed by a thin shell of bone. When this cavity was packed with iodoform it was obvious that but a very small proportion of the astragalus consisted of bone, since it was practically an idoform and not an osseous astragalus. The lower end of the tibia was deeply excavated in parts, and these spaces

were plugged in a similar way. The patient made an uninterrupted recovery, and is now at a convalescent home.

It will be noted that the above method of administering iodoform differs altogether from its employment as an emulsion. Lane uses the iodoform as a packing to occupy for a sufficient length of time—with a solid material which contains no organisms, and in which organisms cannot grow—a cavity which would otherwise contain blood in which micro-organisms might readily grow, especially if they were present in other parts of the body, this packing being gradually removed and replaced by bone.

#### GASTRO-ENTEROSTOMY; BEING A MODI-FICATION OF SENN'S METHOD.

PAUL (Lancet, July 15, 1893) states that Senn's bone-plate method of performing the operation of gastro-enterostomy has been practised in the neighborhood of Liverpool about six times; and three patients are known to have lived long enough after the operation to test its results. Mr. Stansfield's patient lived for four months, symptoms of pyloric obstruction recurring about eight weeks after the opera-A post-mortem examination was made, and the new opening was found to be perfectly closed, with the silk ligatures in situ. Mr. Larkin's case, so far as the opening is concerned, proved to be an exact counterpart of Mr. Stansfield's; and there was Paul's case, in which the patient died about two months after the operation, with the opening contracted to at least one-third of its original size. These being the only "successful" cases in that district, it is perhaps not to be wondered at that physicians are a little shy of encouraging the operation of gastro-enterostomy for pyloric cancer.

The published records from other districts appear in some instances to be of a more hopeful nature; but prolonged relief is certainly the exception and not the rule, while the symptoms have in several cases pointed to a repetition of the Liverpool experience, though the result has not often been verified by postmortem examination. In Senn's record of his original experiments there are only four examples of gastro-enterostomy. Of these, one dog died from causes indirectly connected with the operation on the following day, and another was killed on the seventh day; hence the first two have little or no bearing upon the question of the permanency of the opening. was killed on the thirty-fourth day, and the fistulous opening was found to be large enough to admit the index-finger. The fourth was killed on the fourteenth day, and the opening was entirely closed. Mr. Bowreman Jessett records two experiments in which he repeated Senn's operation, killing one dog three weeks and the other a month afterwards, with the result that water passed freely through the opening in each case, but the size of the opening is not stated. Senn's explanation of the cause of closure is that either the opening in the bone-plates was too small or the lateral sutures had been passed too near the edge of the cut, thus allowing its margins to approximate. But whether this simple explanation is correct or not, and it is at least doubtful, the fact remains that both in the original experiments and in the practice of several surgeons subsequently the opening has closed. At the same time it may be said to have been clearly shown that a fistulous communication between the stomach and bowel may be established, even in very debilitated subjects, without great risk to life, and this is an important point. Having once learnt the secret of a safe operation, it is surely only a matter of detail to secure an opening which will prove to be more permanent.

Cases in the human subject seem to show that the inosculation is at first quite satisfactory, that for some six or eight weeks it remains fairly free, and that then it slowly contracts, with the recurrence of symptoms of This points to the character of obstruction. the opening being in fault rather than the bone-plates or the suturing. It is a clean incision, involving no loss of tissue, and clean incisions in the stomach tend to heal remarkably well. Probably the more food that passes through the new opening the better it is maintained, and in cases of combined pylorectomy and gastro-enterostomy, like Mr. Rawdon's and Mr. Jessett's, it would always be permanent; but the obstruction offered by a pyloric cancer is diminished by the temporary relief which the operation affords, just as rectal stricture yields for a time after colotomy. doubt at first food again passes by the pylorus, as we know that fæces pass again by the rectum when no "spur" has been made, and in either case the new opening is liable to shrink. It was in the belief that the cause of failure is to be found in the character of the opening that some further experiments, presently to be described, were undertaken. Another drawback to the present method of operating is the necessity of bringing the jejunum across the transverse colon to attach it to the front of the stomach. In Paul's case this produced a condition of partial obstruction, which was very troublesome to the patient, owing to the constant distention of the cæcum with gas. The difficulty has been met in two ways, neither of which is at all satisfactory. One is to tear through the transverse meso-colon and gastro-colic omentum and to bring the jejunum through this opening to the front of the stomach; the other is to turn the whole stomach up and attach the intestine to the back instead of the front surface of it. The former plan has resulted in obstruction of the bowels through kinking, and the latter is a very difficult and sometimes impossible operation to perform in the presence of malignant disease.

The operation about to be described strangulates the connected surfaces of the stomach and intestine, effecting by sloughing a clean circular opening between the bowel and the back of the stomach, which, in experiments on dogs, has shown no tendency to diminish up to a period of one hundred and seven days, the longest experiment made. The special apparatus required involves nothing more than a hard ring, preferably of bone, about threequarters of an inch in diameter for the human intestine, and perforated with four small equidistant holes. The ring may be rounded on all sides or only on one. This surface should always be round in order that it may not cut the piece out too sharply and lessen the breadth of surrounding adhesions. The four holes are charged each with a needle carrying a strong double silk thread, very securely double-knotted For dogs, rings of half on the under side. an inch in diameter were used, and the ligatures were generally tied over a second ring, though this was subsequently found to be unnecessary.

The operation is performed as follows: The abdomen is opened and the first part of the jejunum is found and brought out of the wound in the usual way. A small incision is made into the bowel, where it can be applied to the lower and back part of the stomach without the least tension. Through this small wound the bone ring is slipped into the bowel, the needles are passed, and the opening is temporarily closed. Next a cut of about an inch and a quarter in length is made in the front wall of the stomach opposite to the spot where the inosculation is desired, and the four needles are passed in regular order through the transverse meso-colon and posterior wall of the stomach and are brought out of the front opening. When they are drawn tight of course the intestine is firmly applied to the back of the stomach, and by cutting off the needles and

tying the ligatures tightly, the included disks of bowel and stomach are strangulated between the ring in the former and the ligatures in the latter. While the parts are still held forward by the ligatures, the centre of this area may be cut out with a tenotomy-knife, thus at once effecting a communication between the two viscera. Then the ligatures are cut short, the parts are allowed to drop back into position, and the opening in the front wall of the stomach is closed by a double row of fine green catgut sutures, by a continuous row in the mucous membrane, and by Lembert sutures in the outer coats. Finally, the stomach is turned up if possible, and a few Lembert sutures are applied on the outskirts of the inosculation to retain the parts in position when they lose the support of the ligatures by sloughing on the second day. These sutures are much more important in this than in Senn's operation; but if they cannot be used, owing to fixation of the organ by cancerous infiltration,—and it must be a very bad case in which none can be passed,—the patient must be kept very still for at least a week. Such additional support is less urgently needed when the intestine is applied to the back than when it is applied to the front of the stomach, as the tension in the former case is much less; but it should never be neglected. The abdominal wound is always closed with deep sutures of fishing gut, including all the tissues from the peritoneum to the skin.

The experiments were all performed upon mongrel terriers about the size of an ordinary fox terrier, and the part of the bowel used was the coil which happened at the time to be lying nearest to the lower and posterior part of the middle of the stomach.

In the first experiment two rings were used, -one in the intestine and the other in the stomach. No Lembert sutures were applied round the inosculation. The animal suffered very little from the operation, taking its food well all the time. It was kept on bread and milk for about a week, and then on ordinary The bone rings, slightly digested, were passed on the fourth day in the second motion after the operation. The animal was killed on the thirty-first day, when the opening was found to be circular and free, but its size was not estimated until after the parts had been hardened in strong spirit, when it measured only onethird of an inch in diameter. The incision in the front of the stomach could hardly be detected, and there were scarcely any adhesions except those concerned in the gastro-enterostomy itself.

In the second experiment the proceedings were reversed, the first ring being inserted into the stomach and the ligature tied over a second ring in the duodenum through an opening on its opposite side. There was some tension on the bowel, but no supporting Lembert sutures were put in. The dog did very well for twentyfour hours, but then seemed to be rather uneasy, and on the following morning was found to be dead. An examination showed that the heavy duodenum—it is very thick in the dog had partly broken through the fresh adhesions, round the slough and had permitted a fatal ex-Until this case occurred the outer travasation. edge of the ring on the side next the viscera had not been rounded off nor had the surrounding Lembert sutures been used. Afterwards both modifications were adopted, but the operation was not repeated on the front of the stomach, as everything was more favorable for the opposite position.

In the third experiment the operation was performed as in the first case, but with the precautions suggested by the second. The dog did well throughout, and was not killed until the one hundred and seventh day. He had increased in weight. The opening was found to have been made between the back part of the stomach near the pylorus and the commencement of the colon. It readily admitted a half-inch test-tube, thus showing that in this long period it had undergone no contraction. This case is particularly valuable, because it is almost certain that the opening must have been quite functionless, and still did not contract. Had food passed through it into the colon nutrition would have suffered, and had fæces escaped by it into the stomach, vomiting, as was shown by a subsequent case, would have occurred.

In experiment four the steps of the operation were the same as those of the last experiment. The animal was stronger than any of the others at first: it passed the rings on the fourth day. After about a week it suddenly began to throw up yellow vomit, and later fæcal vomiting became so severe that it was thought advisable to have the dog killed on the twenty-second day. On examination, a full-sized opening was found (five-eighths-of-an-inch rings were used) between the back of the middle of the stomach and the small intestine, rather less than halfway down. The mucous membrane of the stomach was a good deal congested. dently fæcal matter had poured freely through the new opening into the stomach, while food had apparently left chiefly by the pyloric orifice. It is unnecessary to point out that this may be expected to result in successes even more signal than those already achieved. At the same time. Dr. Bourneville would hardly induce us to put a veto on surgical intervention in infantile idiocy. Such intervention, practised in cerebral lesions of apparently an even less hopeful character, has often enough realized expectations to warrant not only its repetition, but its extension to all cases in which osseous obstruction of the cerebrum has been fairly diagnosed. The truth, indeed, seems to lie between the methods of both schools,—the surgical and the medico-educational. In Italy, as we pointed out a year ago, Dr. Fuller's operation has been performed with such success as to have passed into the recognized resources of surgery. We have yet to obtain a series of statistics "scientifically checked" which shall give us the results of a combination of the two systems,—that of surgical intervention followed up, or rather accompanied, by that of the pedagogic authority.

## Reviews.

REACTIONS: A SELECTION OF ORGANIC CHEMICAL PREP-ARATIONS IMPORTANT TO PHARMACY IN REGARD TO THEIR BEHAVIOR TO COMMONLY-USED REAGENTS. By F. A. Flückiger, Ph.D., M.D. Translated, revised, and enlarged by J. B. Nagelvoort. Authorized English edition.

Detroit: George S. Davis, 1893.

This is certainly one of the most useful of books for both the physician and pharmacist. It does itself an injustice in having the somewhat concise title of "Reactions," for while it is devoted to a careful description of the reactions characteristic of various substances, both those derived from the mineral and vegetable kingdoms, it contains an amount of information far in excess of that which one would imagine from such a title. It is published on handsome glazed paper with wide margins, and is one of the most neatly printed books of its kind that we have ever seen.

In view of the large amount of money which is to be obtained by the preparation of various medicinal substances, many manufacturers, intentionally or otherwise, may place upon the market samples which are not as pure as they might be. With this book at hand, the physician and pharmacist can readily detect sophistication or lack of purity.

We note that through the entire book the final e is dropped in the case of alkaloids, and as a result no distinction in the spell-

ing is made between glucosides and alkaloids. We are well aware that there are good reasons for dropping the final e, but we believe that there are still better reasons for retaining it.

Mr. Nagelvoort is to be congratulated upon his careful translation of a somewhat difficult text, and upon the additions he has made to Professor Flückiger's well-known work. Both the translation and the additions are acknowledged in a pleasant note from the author, a fac-simile of which is printed opposite the author's picture on the first page.

A MANUAL FOR BOARDS OF HEALTH AND HEALTH OFFICERS. By L. Balch, M.D., Ph.D. Albany, N. Y.: Banks & Bros., 1893.

This small manual, numbering some two hundred and fifty pages, will doubtless prove of much value to medical men who are connected officially with boards of health in city or State. It details the powers and duties of a State Board of Health, the question as to the removal of patients, and the suppression of epidemics. It also contains blanks to illustrate the best forms to be employed for the notification of nuisances and other functions connected with the duties of a health officer, while the last hundred pages consist in the reprinting of the laws of the State of New York in relation to the public health.

MEDICACION Y MEDICAMENTOS CARDIO-MOTORES. Por D. Antonio Espina y Capo. Segunda edicion, corregida y considerablemente aumentada.

Madrid: Administracion de la Revista de Medicina y Cirugia Practicas, 1893.

This small octavo volume of three hundred and thirty pages consists of a description of the botanical source, physiological action, and therapeutic value of practically all the drugs which are used as cardiac stimulants, even including sulphate of quinine and ergot. While we have not been able to discover that the author has added anything to the literature of the subject in the sense of original observation, it forms an interesting and complete, though brief, summary of the subject of which it treats, and so good a one that we should not be surprised if a translation were published in this country. The present work is an enlarged second edition.

Leçons de Thérapeutique. Par Georges Hayem. Paris: G. Masson, 1893.

This volume by the well-known Professor of Therapeutics in the Faculty of Medicine in Paris consists of his fourth series of lectures upon therapeutic topics, and discusses the medication of dyspepsia, dyspnœa, cough, expectoration, albuminuria, uræmia, and excessive sweating. In conjunction with the three earlier volumes, this one completes the work which has been appearing during the last few years.

i

1

Ŕ

b

4

1:

The book shows that the author is fully in touch with the recent advances which have been made in the study of functional diseases of the stomach, and copious accounts are given of the various tests for hyper- and hypo-acidity which modern study of gastric affections has proved to be so important for correct diagnosis and treatment.

This is the most complete work upon the subject of the treatment of the common and distressing symptoms of functional disease that has been published. The lectures upon the treatment of dyspepsia take up the greater part of the book, the other subjects being discussed with comparative brevity. A carefully-prepared index, much more complete than that which usually is published in French works of this character, closes the volume.

THE PHARMACOPCEIA OF THE UNITED STATES OF AMERICA. Seventh decennial revision (1890). By authority of the National Convention for Revising the Pharmacopoeia, held at Washington, A.D. 1890. Official from January 1, 1894. Published by the Committee of Revision.

Printers and binders: J. B. Lippincott Company. Agents: P. Blakiston, Son & Co., Philadelphia.

We feel confident that the medical profession will be much pleased with the manner in which the Committee of Revision has performed its difficult task. Much good judgment is required in the revision of our standards, and it is a matter for congratulation that the committee has been conservative rather than overanxious to make many changes. In changing the names or strength of preparations, the foremost thought has been the safety of so doing.

Among the subjects considered was the proposition to drop the final e in the spelling of oxide, bromide, chloride, iodide, bromine, chlorine, iodine, etc., and also in alkaloids; thus, oxid, chlorid, bromid, iodid, morphin, strychnin, etc.

We agree with the committee that such a radical change is not at this time justifiable. The terminal e in alkaloids serves to distinguish them from neutral principles.

A change which was considered advisable was to place the name of the basic element first in the title of chemical compounds, such

as salts, oxides, hydrates, etc.; thus, instead of chlorate of potassium, sulphate of magnesium, benzoate of sodium, etc., we have potassium chlorate, magnesium sulphate, sodium benzoate, etc. In naming the chemical compounds of mercury and iron still further changes were made in using the terms ous and ic to indicate whether they are the higher or lower compounds of these metals; thus, ferrous sulphate, ferric sulphate. The distinguishing adjectives were retained in the mercury compounds; thus, mild mercurous chloride, corrosive mercuric chloride, yellow mercurous iodide, red mercuric iodide, etc., these changes harmonizing the chemical and the pharmacopæial names of such compounds. The names of some other substances have undergone change also. Chloroform signifies the purified product, ether is purified ether; the commercial preparations of ether and chloroform have been dis-Aloes becomes socotrine aloes, creasote now creosote, brayera becomes kousso. The mixtures of asafetida, almonds, ammoniac, and chloroform are designated emulsions; mixture of iron and ammonium acetate now is properly solution of iron and ammonium acetate. Green soap becomes soft soap, and tincture of green soap, liniment of soft soap. Denarcotized opium becomes deodorized opium, and deodorized tincture of opium, tincture of deodorized opium. The name of green iodide of mercury has been changed to yellow mercurous iodide. We are in perfect accord with the committee in the careful revision of the names of these preparations.

After carefully considering the advisability of establishing a fixed proportion of active principles in preparations made from the more energetic drugs capable of being assayed, it was decided at this time to apply the process of assay only to cinchona, opium, and most of its preparations, and to the preparations of nux vomica. This is a step in the right direction, and we are promised that the list of assayed preparations shall be increased upon the next revision.

Comparatively few changes have been made in the strength of the various preparations. The following are some of the most noticeable: Phosphoric acid now contains 85 per cent. absolute acid instead of 50 per cent.; sulphurous acid, 6.4 per cent. absolute acid instead of 3.4 per cent.; chlorinated lime should contain 35 per cent. available chlorine instead of 25 per cent.

The general formulæ for decoctions and infusions is about 1 part of the substance to 5 of water, instead of 1 to 10. The strength of tincture of stramonium-seed and tincture of physostigma is about one-half that of the Pharmacopæia of 1880. One grain of saccharated pepsin should digest three hundred grains of freshly-coagulated pepsin instead of fifty grains.

Ninety articles have been dismissed and eighty-eight new ones added to our official list. Among the most important additions are acetanilid, salol, resorcin, naphtol, naphtalin, eucalyptol, menthol, thymol, terebene, terpin hydrate, pepsin, pancreatin, hydrous wool fat, cocaine hydrochlorate, hydrastine hydrochlorate, hyoscine hydrobromate, hyoscyamine hydrobromate, physostigmine sulphate, sparteine sulphate, caffeine citrate, chloroform water, hydrogen dioxide water, absolute and deodorized alcohol, elixir of phosphorus, aromatic elixir, glycerites of boroglycerin, hydrastis, carbolic and tannic acids, fluid extract of Rhamnus Purshiana (cascara sagrada), tincture of strophanthus, vegetable cathartic pills, pills of carbonate of iron (Blaud's pills), spirit of glonoin (nitro-glycerin), spirit of phosphorus, The addition of these substances are aloin. justified by their frequent use, but we should have been pleased to have seen the following added also: Camphoric acid, ammonium ichthyo-sulphate, ethyl bromide, methyl chloride, apiol, cactus grandiflorus, pelleterine, or some agreeable preparation of this alkaloid, copper arsenite, and a liquid preparation to correspond to distilled extract of hamamelis.

We are sorry to see dismissed from the Pharmacopœia the mixture of potassium citrate, an old and much-used preparation. The dismissal of the whole class of abstracts is due to the fact that they have never become popular. This is to be regretted, as they are the only class of solid preparations bearing a definite relation to the strength of the crude drug from which made. It will be remembered that each grain of the abstract represented the strength of two grains of the crude drug mixed with sugar of milk.

The weights and measures are given exclusively in the metric system. This change has been made so gradually that no one should complain of not being familiar with this system of weights and measures. The Pharmacopœia having been adopted as a standard authority by our government and many of the States, the word "official" replaces "officinal." Complete tables of all the articles added and dismissed, change of names in the English and Latin, and tables comparing the strength of the preparations of the more energetic drugs with those of the Pharmacopœia of 1880 add de-

cidedly to the value of the work. The type is clear, the paper good, and the binding is neat and durable. The book becomes official January 1, 1894.

E. Q. T.

# Notes and Queries.

# THE WILLIAM F. JENKS MEMORIAL PRIZE.

The third triennial prize, of five hundred dollars, under the deed of trust of Mrs. William F. Jenks, will be awarded to the author of the best essay on "Infant Mortality during Labor, and its Prevention."

The conditions annexed by the founder of this prize are, that the "prize or award must always be for some subject connected with obstetrics, or the diseases of women, or the diseases of children;" and that "the trustees, under this deed for the time being, can, in their discretion, publish the successful essay, or any paper written upon any subject for which they may offer a reward, provided the income in their hands may, in their judgment, be sufficient for that purpose, and the essay or paper be considered by them worthy of publication. If published, the distribution of said essay shall be entirely under the control of said trustees. In case they do not publish the said essay or paper, it shall be the property of the College of Physicians of Philadelphia."

The prize is open for competition to the whole world, but the essay must be the production of a single person.

The essay, which must be written in the English language, or if in a foreign language, accompanied by an English translation, should be sent to the College of Physicians of Philadelphia, Pa., U. S. A., before January 1, 1895, addressed to Horace Y. Evans, M.D., chairman of the William F. Jenks Prize Committee.

Each essay must be type-written, distinguished by a motto, and accompanied by a sealed envelope bearing the same motto and containing the name and address of the writer. No envelope will be opened except that which accompanies the successful essay.

The committee will return the unsuccessful essays if reclaimed by their respective writers, or their agents, within one year.

The committee reserves the right not to make an award if no essay submitted is considered worthy of the prize.

> JAMES V. INGHAM, Secretary of the Trustees.

August 1, 1893.

# Therapeutic Gazette.

Whole Series, Vol. XVII. DETROIT, MICH., PA., November 15, 1893.

Third Series, Vol. IX. No. 11.

#### PAGE PAGE CONTENTS. Therapeutics of the Mastoid..... Treatment of Affections of the Lachrymal Canals by Conservative and Antiseptic Clinical Experiences with the Cathartic Original Communications. Acid of Senna..... 763 Methods. A New Process of Lachry-Treatment of Diabetes Mellitus ...... 763 motomy...... 779 The Treatment of Gout. By James Concerning Antisepsis of the Conjunc-Therapeutics of Abortion...... 763 Tyson, M.D..... 721 tival Sac and the Antibacterial Prop-erties of Tears, and Experimental The Treatment of Malaria with Methy-Venesection in the Treatment of Enlene Blue, and its Local Application in gorgements and Dilatations of Right Diphtheria...... 764 Researches in Antisepsis in operating Side of Heart. By I. E. Atkinson, for Cataract, made at the Ophthalmic Clinic in Zurich..... 780 The Phosphates of Calcium...... 766 On the Treatment of Chlorosis. By F. The Employment of Throat Douches .... 766 The Action of Scopolamine on the Eye.. 781 Forchheimer, M.D..... 731 The Treatment of Tuberculosis in Chil-Subconjunctival Injections of Sublimate 78z The Use of Nitro-Glycerin in Arterio-Operative Treatment of Tympanic Ver-Sclerosis. By Thomas G. Ashton, The Local Use of Guaicol...... 767 Removal of the Stapes for the Relief of M.D..... 736 The Treatment of Cardiac Dropsies by Antisepsis in Cataract Extraction. By Theobromine...... 767 Deafness..... G. E. de Schweinitz, M.D...... 738 The Serum Therapeutics of Cholera..... 768 Stacke's Operation of opening the Attic The Measured Effects of Certain Thera-The Treatment of Myxœdema by Thyand Antrum from the Meatus...... 782 peutic Agents, among which especially A New Treatment of Mammary Abscess 783 are Lavage, HCl, and Intragastric roid-Feeding: Its Advantages and Risks...... 769 The Treatment of Fractures of the Lower Electricity, upon the Secretory and The Treatment of Chorea by Large Extremity...... 783 Motor Functions of the Stomach in Recovery from Chronic Glanders...... 783 Doses of Quinine...... 770 Cases of Chronic Catarrh (Glandular The Condition of the Urine in Relation Fixing a Displaced Liver..... 784 Gastritis). By D. D. Stewart, M.D. 744 The Treatment of Wounds of the Brain 784 to Anæsthesia..... 770 A Case of Utetine Myoma, Hysterec-The Value of the Cold Bath in the Fever An Original Method of restoring the tomy according to a New Method. of Pneumonia of Children..... 771 Alveolar Arch in Anterior Cleft of the By John M. Fisher, M.D..... 752 The Pharmacology of the Nitrites and Hard Palate and of correcting the Report upon Cases of Tubercular Laryn-Deformity of the Alæ Nasi in Harelip 784 Nitrates..... 771 gitis treated in Colorado Springs. By The Treatment of Pericarditis...... 773 Gastrostomy and the Formation of an S. Edwin Solly, M.D..... 754 Ouinine Blindness..... 774 Artificial Anus..... 785 Report of a Case of Splenectomy...... 785 Hearing restored by Large Doses of Leading Articles. Wounds of the Heart ...... 785 Quinine..... 775 Calomel Conjunctivitis...... 757 Massage in Muscular Rheumatism, and Hemorrhagic Infarction of the Scrotum 786 The Use of Salines in Peritonitis ......... 758 The Treatment of Bubo..... its Value in the Diagnosis of Muscular The Value of Creosote in Gastric Fer-Rheumatism in Neuritis..... 775 A New Method of Direct Fixation of mentation...... 759 Treatment of True Croup by the "Brook-Fragments in Compound and Ununited A New Operative Procedure for Relief lyn Method"..... 775 Fractures...... 787 of Enlargement of the Prostate Gland 760 A Rational Operation for Entropion A Case of Suprapubic Cystotomy in which the Bladder was distended with following Granulations..... 777 Reports on Therapeutic Progress. Air instead of Water, and Four Hun-The Treatment of Ulcers and Abscesses dred and Ninety-five Calculi removed 787 Stomach-Symptoms due to Abstinence of the Cornea by Curetting and Irrigafrom Morphine...... 756 tion.... A New Method for the Radical Cure of Specific Treatment of Typhoid Fever .... 761 On the Value of Formic Aldehyde as an Varicose Veins...... 788 The Treatment of Typhoid Fever with Ocular Antiseptic..... Concerning Ocular Syphilis and its Dif-Dead Cultures of the Bacillus Pyo-Reviews..... 788 cyaneus...... 762 ferent Methods of Treatment ...... 779

# Original Communications.

## THE TREATMENT OF GOUT.

Read before the Section on Therapeutics at the Pan-American Medical Congress.

By JAMES TYSON, M.D.,
Professor of Clinical Medicine in the University of Pennsylvania.

THAT there can be no rational treatment of gout without a correct understanding of its pathology is evident. It cannot, on the other hand, be claimed that the pathology of gout is thoroughly understood, although all admit that many facts bearing on it are well

determined. One of these is that uric acid is in some way causative. Whether, however, the uric acid thus responsible is the result of increased formation or diminished excretion, or both, is not so generally acknowledged. Thus, Garrod, whose work, first published in 1859, is to-day regarded as one of the classics in medicine, held that there is no increased formation of uric acid in the gouty, but a diminished excretion, which results in an accumulation in the blood and other fluids of the body, and that this is true of almost every phase of gout. Such accumulation Garrod showed by his well-known thread-test. Although the methods of analysis employed by him were not those acknowledged at the present day to be the most

reliable, the more recent work of Pfeiffer, conducted in accordance with modern methods, essentially confirms the original statements of Thus, Pfeiffer,\* using Wolkowski's method, determined the uric acid in the urine of certain cases of gout, of which he made two classes. Of these, the cases of the first category had not passed over into the chronic stage, —that is, had not acquired changes, such as stiffness of the joints, gouty tophi, atheromatous blood-vessels, and the like,—but had suffered acute attacks with intervals of complete freedom from symptoms. The second category included cases which had undergone the changes referred to. His results he contrasted with those of the urine of healthy men at corresponding periods of life, as follows: In Class I., in which the urine of the exempt period was examined, the quantity of uric acid in the twenty-four hours per one hundred kilogrammes of body-weight

Age.	In gouty subjects.	In healthy men.
<del>-</del>	Gramme.	Gramme.
From 30 to 40	.885	.965
From 40 to 50	.818	.882
From 50 to 60	.701	•••••
From 60 to 70	.661	.752

It will be seen that the excretion was less in the gouty subject than in the healthy man in Class I. The same was true of the urea, which amounted to only 28.8 grammes in gouty subjects for each one hundred kilogrammes of bodyweight, instead of an average of 33.1 grammes or each one hundred kilogrammes in the healthy men, observations being made on men from thirty-three to sixty-five years old.

Thus it will be seen that in the urine of such cases in the intervals between attacks there is a very decided diminution in the quantity of uric acid eliminated as compared with persons in health.

In Class II., those in whom chronic gouty changes had established themselves, Pfeiffer noted a somewhat different result. Thus, while the average elimination of uric acid in a healthy man from thirty-three to sixty-five years old was .860 gramme, that of the gouty subject between thirty-three and sixty-five years amounted to .973 and even more, while the ratio of the urea to uric acid, which was 33.7 for the healthy person, amounted for the gouty to 35. Thus, in this class of cases—the gouty with chronic changes—there is an *increased* excretion of uric acid as compared with health. This is a reversal of the original results of Garrod, who

found in the urine of this class of gouty subjects no uric acid at all, or only traces. This is ascribable to defect in the older method of analysis,—that of Heintz, by hydrochloric acid. It is now known that this fails to get out the whole of the uric acid.†

It will be seen, however, that the difference in favor of increased excretion is very slight, while the average excretion in the two classes of cases between thirty-six and seventy-three years old is still a trifle less than in the nongouty, being .855 as compared with .860, while the urea is also somewhat less, being 31.3 instead of 33, the ratio of urea to uric acid being 36 to 1, as contrasted with 38.5.

Now, if we turn to another modern observer, Alexander Haig, t who also used Wolkowski's method for the determination of uric acid, and whose work seems to have been done with unusual care, we find his studies entirely confirm the original results of Garrod. Haig claims that there is "almost never" an excessive formation of uric acid at any time, and that its accumulation in the blood and body is generally due to retention or failure of excretion: that uric acid is, on the whole, continuously formed in the proportion of 1 to 33 of urea. In certain states of the blood, constituted essentially by increased alkalinity, uric acid is held in solution in larger quantity, constituting uric-acidæmia. At such times, too, it is eliminated in increased quantity by the urine, by which it is also readily held in solution because of the alkalinity of this secretion. opposite states of the blood the uric acid is driven out of this fluid and deposited in the tissues of the joints. Haig holds, also, that these opposite conditions, which are fluctuations in secretion only, can be artificially produced by drugs, food, temperature, and other conditions influencing the reaction of the blood. alkalies, alkaline foods, and warm weather favor the former, while acids and cold weather favor the latter, and it is under influences like these that uric acid in the shape of urates is stored up in the body. He further says § that the blood never becomes loaded with uric acid except as the result of previous imperfect excretion,

<sup>\*&</sup>quot; Ueber Hamsäure und Gicht" (Berliner Klin. Wochenschrift), No. 17, April 25, 1892, s. 415).

<sup>†</sup> Pfeisser says that this indisposition of uric acid to be thrown down on the addition of hydrochloric acid, formerly regarded as characteristic of gout, becomes more marked as age advances, and may be said to be almost the rule with persons over sixty. Possibly, says Pfeisser, it may present itself earlier in gouty subjects than in the normally constituted.

<sup>‡ &</sup>quot;Uric Acid as a Factor in the Causation of Disease,"
by Alexander Haig, London, 1892.

<sup>&</sup>amp; Op. cit., p. 7.

and such imperfect excretion or retention is sufficient to account for the largest quantities he has ever seen in the human body, and that it is not necessary to suppose excessive formation in explanation. Further, that he does not assert that such formation never occurs, only that he has never met any conclusive proof of its occurrence, while all the phenomena of disease can be explained without postulating the excessive formation of a single grain.\*

The ultimate result is, however, the same. Whether it be from diminished excretion or increased formation, or both, there is an accumulation of uric acid in the blood, which is responsible, first, for certain premonitory symptoms of gout, and, second, for certain local symptoms. The latter are of an inflammatory nature, and consist essentially in pain, swelling, and redness of the joints, preferably of the smaller ones, and especially of the metatarso-phalangeal articulations of the great toe; more frequently, perhaps, of the left great toe.

It may be worth while to dwell a moment on the relation of the uric-acid compounds to the local inflammation. It is scarcely necessary to say that uric acid does not exist as such in the blood, even in pathological conditions. The normal urates, as originally shown by Bence Jones, and recently confirmed by Sir William Roberts, are quadri-urates. In the pathological state these are converted into the less soluble bi-urates which make up the local deposits. It has all along been considered that these deposits are the direct cause of the gouty inflammations. Haig, as the result of his recent researches, reasserts this view in the following graphic language: †

"Then I also noticed that in curing a headache by giving an acid to diminish the excretion of uric acid, I always produced a certain amount of pricking and shooting pain in my joints (generally in those which had been most used on the day in question), and it naturally occurred to me that the uric acid was held back in these joints and produced the pains. The uric acid which had failed to appear in the urine must have gone somewhere. What more natural than to suppose that it had been retained in the joints (where in gout it is found), and that the pricking pains were the evidence of its presence?

"Then, on turning to Sir A. Garrod, I find that he had described precisely similar joint-pains as occurring in gouty subjects immediately after the ingestion of beer or wine, and a very little investigation sufficed to prove that all wines and beers are strongly acid, so that a very simple explanation could be given of the facts."

In striking contrast to these heretofore acknowledged views are those recently announced by Pfeiffer, based on experiment and confirmed, he believes, by clinical facts. He introduced under the skin chemically pure crystallized uric acid, suspended in water, with absolutely no immediate results. In the course of twelve to eighteen hours, however, as the uric acid began to be dissolved, irritation and skin inflammation presented themselves. These symptoms were further totally prevented if large doses of mineral acids were introduced into the body, by which solution of the uric acid was presumably prevented, while the use of alkalies caused them to set in earlier and with greater intensity. So, also, the phenomena of irritation presented themselves earlier if the injection of uric acid was immediately followed by the introduction of alkaline solutions in the same locality. Again, pain and inflammation appeared promptly if solutions of uric acid are injected. The results of these experiments are also in accord, says Pfeiffer, with the clinical fact that the tophi of gouty patients are usually painless; often, indeed, they form without the knowledge of the patient. Not the precipitated uric acid, therefore, but the dissolved uric acid, according to this view, must be regarded as the irritating agent. According to it, also, an acute attack is the result of a re-solution by the blood of previously-deposited uric acid, the impulse to this re-solution being an increased alkalescence of the blood and body juices, while the deposit is the result of diminished alkalescence. Pfeiffer, in further support of this view, calls attention to the fact that the most recent chemical analyses by Lecorché, Ebstein, and himself show that the excretion of uric acid during an attack of gout is increased and not diminished, as taught by Garrod. I can, of course, have nothing to say of Pfeiffer's ex-

<sup>\*</sup> Notwithstanding these observations, it is not unusual to find even medical men under the impression that gouty subjects excrete much more uric acid than the healthy, an error probably due to the fact that the urine of gouty subjects is apt to contain large sediments of uric acid, especially during acute attacks, whence is erroneously inferred increased excretion.

It should be mentioned that in a communication to the Tenth Congress of German Physicians, so recently as 1892, Mordhorst, of Wiesbaden, also asserted that the average of the entire uric-acid excretion of the gouty is considerably greater than in the rheumatic and healthy. These results are ascribed by Pfeiffer to the careless selection of material for the observation and defective methods of analysis.

<sup>†</sup> Op. cit., p. 2.

periments; but, so far as the clinical facts which he adduces to prove his position are concerned, my own experience is not in accord with his.

The most recent studies on this subjectthose of Sir William Roberts, embodied in the Croonian lectures and just republished in a small brochure, entitled "Uric-Acid Gravel and Gout"-reaffirm the older view, that the "mechanical theory offers a natural and complete explanation. The crystalline urates precipitated in the cartilaginous and fibrous structures of the joints necessarily act as foreign bodies; they excite irritation, clog the lymphchannels, exercise pressure on the tissue elements and impede their nutritive operations. These effects sufficiently account for the inflammation, pain, and swelling which ensue, and explain the remoter degenerative changes which follow" (p. 111).

TREATMENT.—We are now ready for a rational treatment of gout. Whether it be an irritant in solution or an irritating precipitate, uric acid is its cause; hence whatever diminishes the amount of uric acid in the economy must tend to relieve gout. It is plain, also, that we may diminish uric acid in two ways: first, by confining the gouty person to such food as produces a minimum of uric acid; second, by administering such medicines as will promote its solution and elimination. The first of these constitutes, in the main, the dietetic treatment, the second the medicinal.

r. The Dietetic Treatment.—I have said the elimination of urea- and uric-acid-producing substances from the dietary constitutes the dietetic treatment, which is by far the most efficient of the treatments of gout, without which all else is only palliation.

This consists essentially in the elimination from the food of all nitrogenous or albuminous principles, which are they whose complete combustion results in urea and incomplete combustion in uric acid. As to these there should be no half course. They ought to be excluded as far as possible from the dietary. I say as far as possible, for it is practically impossible to eliminate them altogether. The foods which are the type of this class should, however, be altogether omitted. Such are the meats of the butcher-shops, the albumin of eggs, and the cheeses. The first include beef, veal, mutton, lamb, and pork, whether salt or fresh, and for the most part fish. As to cheeses, as a halfpound of cheese contains almost as much nitrogenous matter as a pound of beef,—twenty-seven per cent. when made of the whole milk and twenty-eight per cent. when made of skim-milk,

—it is plainly contraindicated. If we consider only the edible parts of beef,-i.e., meat deprived of the refuse represented by bones, skin. and shells,—it contains, according to its source, seventeen to twenty-three per cent. of proteids; mutton, from fifteen to eighteen per cent. Of fish, flounder contains 13.8 per cent.; mackerel, eighteen per cent.; halibut, fifteen per cent.; and salmon, twenty-one per cent., or quite as much as beef and more than mutton. Salt codfish contains fifteen per cent.; smoked herring. twenty per cent.; and canned sardines, twentyfour per cent. Poultry contains fourteen to fifteen per cent. of albuminates and game twentytwo per cent. The hen's egg, including albumin and fat, contains 13.7 per cent. of protein, whence it is plain that the yellow of eggs contains a very small quantity and becomes a suitable food.

On the other hand, milk contains but three per cent. to four per cent. of protein; butter, one per cent.; and oleomargarine, .6 per cent. The fat oyster contains eight per cent. and the lean 4.2 per cent., and the lobster 5.5 per cent.; other fish than the above mentioned, five to ten per cent.

Of vegetable foods, wheat bread contains 8.9 per cent. of protein; wheat flour, eleven per cent.; and Graham flour, 11.7 per cent.; rye bread, 6.7 per cent.; buckwheat flour, the same; corn (maize), nine per cent.; rice, 7.4 per cent.; sugar, .3 per cent.; potatoes, two per cent.; sweet potatoes, 1.5 per cent.; turnips and carrots, one per cent.; cabbage, 1.9 per cent.; melons, one per cent.; apples and pears, .4 per cent.; and bananas, two per cent. Again, beans contain 23.2 per cent. and oatmeal twelve to fifteen per cent., large proportions of proteids.

Thus, the typical foods permissible from the stand-point of composition are milk, butter, the succulent vegetables, except beans and oatmeal, and fruits. To these oysters and lobster may be added moderately, fish, except those named as containing a large amount of protein, and where extreme rigidity is not required, poultry in moderate amount; but all butcher's meat should be strictly forbidden.

It is usual, also, to interdict the use of carbohydrates,—i.e., starches and sugars,—as well as the hydrocarbons—fats and oils—but I have never been able to see any reason for this. There is absolutely none from the stand-point of chemical composition, since they are totally without nitrogen, and, so far as my own experience goes, no cause from the clinical standpoint. Only in the event of their producing indigestion and fermentation, with the genera-

tion of acids, can they become a cause of gout, and then only, I should say, an exciting cause. I am in the habit, therefore, of permitting the use of rice, potatoes, and other farinacea, and, to a reasonable extent, sugar.

I am glad to be able to say that I am sustained in this view by Sir William Roberts, who, in the brochure just quoted, says, also, "The most trustworthy experiments indicate that fat, starch, and sugar have not the least direct influence on the production of uric acid; but as the free consumption of these articles naturally operates to restrict the intake of nitrogenous food, their use has indirectly the effect of diminishing the average production of uric acid."

Basing his conclusions upon experiments with solutions of blood-serum impregnated with common salt (.1 per cent.), in which he found the precipitation of crystalline biurate always appreciably hastened, Sir William Roberts for some years past has directed the gouty to restrict as far as possible the use of common salt with meals. On the other hand, Sir William recommends that the subjects of uric-acid gravel should be advised to take habitually with their meals as much culinary salt as their palates will tolerate.

There are, however, other sorts of ingesta, also entirely or almost free from nitrogen, acknowledged to be both a predisposing and exciting cause of gout,-namely, malt liquors and wines. These are composed of water, alcohol, carbohydrates, and a trace of mineral matters, but no nitrogen. It is not easy at first thought to understand why these substances should be harmful. Experience, however, shows that the stronger wines, such as port, Madeira, and sherry, by their continued use, are very likely to produce gout, while the lighter wines, -the clarets, hocks, and Moselle wines,-if taken in moderation, rarely produce it. After these, stout, porter, and the strong ales induce gout. Even lager beer, which contains but three per cent. of alcohol, is capable of acting similarly, and I know many men who have been forced to give up this beverage because of this effect. Cider and perry least of all beverages predispose to gout. On the other hand, distilled spirits, especially whiskey, are almost entirely without effect in producing gout. Why is this? Apparently, the amount of alcohol is not the measure of the effect, for whiskey, gin, brandy, and rum all contain more alcohol than any of the wines alluded to. If reference is made to the wines most apt to produce gout, it will be found that they are those which contain a considerable quantity of both sugar and alcohol. Such are port, sherry, and Madeira, all of which contain more than fifteen per cent. of alcohol and much sugar; also sweet champagnes containing eleven per cent. of alcohol. On the other hand, some very sweet wines, as Tokay, Malaga, and the higher Sauternes, which contain much sugar, produce gout less rapidly. It would seem that those liquors which contain alcohol in combination with other substances, especially sugar, are potent gout-producers, especially where they excite indigestion.

As to the acidity of alcoholic drinks, their influence is pretty clearly as exciting causes. In this way act the beers, in which both alcohol and sugar are present in small amount, but which are highly acid. An explanation of this fact is less ready from the stand-point that the acute attack of gout is due to a resorption of the deposited uric acid by an alkaline blood, than on the supposition that the attack is due to the irritative effect of uric acid deposited in the ioints, because of the diminished alkalinity of the blood induced by the absorbed acid. Whatever be the explanation, few facts in the clinical history of gout are better established than that the ingestion of acid is an exciting cause of attacks.

In the same way act acid fruits, such as strawberries, acid oranges, and lemons. On the other hand, to such influence I have known the most divergent response. Thus, a gouty patient of my own could bring on an attack by drinking a single glass of lemonade, while a gouty friend would drink a pitcher of lemonade at dinner without any effect whatever. It is to be remembered that the otherwise harmful effects of the strong distilled spirits, such as are well borne in gout, are no less serious in gouty subjects than in others, and are often induced by the careless prescription of whiskey as less harmful than wines in gout.

2. The Medicinal Treatment.—From the earliest history of the disease practice has recognized two classes of remedies in the treatment of gout,—alkalies and purgatives,—the object of both being to eliminate the offender, the first by producing soluble combinations which pass off readily by the kidneys, the second to carry it off by the bowels. It is plain that a combination of the two principles might be expected to be more efficient than either one alone.

First, as to alkalies and alkaline combinations. My experience places the salicylate of sodium easily at the top, and while it is not so rapid in its effect in relieving the pain of an acute attack of gout as it is in rheumatism, it is nevertheless an invaluable remedy, excelling all others. During an attack it should be given in doses as large as can be borne. As a rule, adult men easily bear 15 grains four times a day, or 10 grains may be administered every two hours. Even larger doses may be given with advantage if borne by the stomach.\* With relief to the acute symptoms, the dose should be reduced; but, as in rheumatism, the remedy should not be discontinued, and between attacks smaller doses should be kept up for some time. These, however, may be substituted by the natural mineral waters to be presently alluded to.

After the salicylates, the alkaline carbonates have always held a high position in the treatment of gout. Half an ounce a day should be the initial dose, reduced with relief to the acute symptoms, but continued. It may be combined with a little lemon-juice, to improve the flavor, or the citrate of potassium may be given in the same doses.

The lithium compounds—the carbonate and citrate—have not proved so useful as to cause me to prefer them to salicylic acid. Indeed, the early results of Garrod with them cannot be said to have been realized in modern therapeutics. Sir Dyce Duckworth says of lithia that it is a remedy better adapted to the chronic than the acute phases of gout. Five grains four times a day, freely diluted, is the dose usually administered, and with this the potassium salts are sometimes combined.

A most valuable adjuvant to the medicinal treatment are mineral waters. The waters which have heretofore received almost universal approval are the alkaline waters, although those possessing purgative properties also enjoy much reputation. In America, however, few of these waters are native, while those which are are so far inferior to the foreign waters that it is practically impossible to ful-

fil these requirements with native waters alone, while the costliness of the foreign waters imported to this country contributes a very serious obstacle to their use. As a consequence, the native waters which have been employed and highly vaunted by their owners on apparently insufficient grounds are of the kind known as negative waters,—that is, they have no mineral ingredients in any quantity to justify their classification in any of the four principal varieties of mineral waters,-viz., the alkaline, the saline, the purgative, or sulphurous, -or on which to base any therapeutic results except by their diluent effect. At the same time it has been noted that these waters are not without effect in relieving gouty symptoms. Reasoning from these facts, I have long been in the habit of prescribing native negative waters, such as are accessible to the patient, or distilled water, with this end in view,—the simple diluent and solvent effect which comes from an increased proportion of water. The further propriety of such a course is found in the fact that gouty and lithæmic patients are often small water-drinkers, never drinking water between meals and very little at meals. To such eight ounces of water ordered on rising, between meals, and at bedtime will often clear off a dark-hued urine of high specific gravity and substitute a lighthued, clear urine, without any sediment.

The actual mineral waters which have acquired the greatest reputation in the treatment of gout are those of which sodium bicarbonate is the chief ingredient, to which the calcium bicarbonate is regarded a valuable adjuvant. Such are the alkaline waters of Vals and Vichy in France, Evian-les-Bains in Switzerland, Neuenahr and Fachingen in Prussia, Contrexville and Vittel in the Vosges, France, and Dax in France. Other waters possessed of reputation in the treatment of gout, in which the quantity of alkaline bicarbonate is smaller, owe it to their combined alkaline and aperient properties, chiefly due to sodium sulphate and magnesium sulphate, and belong to the second category of remedies for the treatment of gout. Such are the alkaline and saline waters of Carlsbad and Marienbad in Bohemia, Kronthal in Nassau. and Brides-les-Bains in Savoy. Then there are the saline waters represented by Baden-Baden, Ems, Homburg, Kissingen, Wiesbaden, and our own Saratoga waters and those of Bedford, Pa. Finally, there are the bitter acidulated and purgative waters, -Hunyadi Jaños and Friedrichshalle in Hungary, Pülna in Bohemia, and Rubinat in Spain,-rarely resorted to for gout, but useful as eliminating agents.

<sup>\*</sup> In this connection I desire to call attention to the method of administration of sodium salicylate by the rectum. 1. The rectum is cleared out of fæcal masses, preferably by warm water, and some time allowed to elapse after this before the drug is injected. 2. From ninety to one hundred and twenty grains of salicylate of sodium are dissolved in three fluidounces of warm water, to which twenty-five minims of tincture of opium have been added. 3. A three-ounce syringe, with a long soft gum tube attached to the nozzle, is filled with the solution, the gum tube introduced about eight inches into the bowel, and the injection made, once daily. 4. After the injection the syringe is withdrawn from the gum tube, which is allowed to remain in the bowel, the syringe filled with air, and this forced into the tube in order to retain the enema. The precaution must be taken of informing less intelligent persons that the injection is to be retained.

The use of these mineral waters is especially indicated in a continuous manner between the attacks, with a view to averting them. Especially useful are the thermal waters in the chronic arthritic complications, in which their internal use is combined with bathing. In this connection may be mentioned Carlsbad and Marienbad, where also the mud-baths are employed, Baden-Baden, Ems, Wiesbaden, Hammon R'Irha in Algeria, available in winter, Plombières in the Vosges, and Dax in France. Homburg and Kissingen are also resorted to for their baths, although the waters are cold.

Sulphurous waters also have some reputation in gout. Especially is this the case with the waters of Aix-la-Chapelle in Rhenish Prussia and Aix-les-Bains in Savoy, Harrogate in England, Richfield Springs, Sharon, and St. Catherine's in America. In all these places the bath treatment is an important adjuvant.

The second category of remedies—the aperients—are decidedly useful in gout, both as eliminators and to prepare the way for the absorption and prompt action of the alkaline bicarbonates. They are not, however, used at the present day as freely as a century ago, and they are commonly reserved for the acute attack.

Among the eliminating remedies is the timehonored colchicum, a drug which is of undoubted value in gout, but which, in my experience, must yield the palm to salicylic acid. For a long time its action was inexplicable, and it came to be spoken of as a specific in gout, as quinine in chills and mercury in syphilis. Modern studies have, however, solved this problem. Professor Rutherford has shown that it is one of the most powerful cholagogues This, taken in connection with what we now know of the office of the liver in urea formation, simplifies very much the solution of the problem. This explains, too, why colchicum produces its sedative and anæsthetic effect without necessarily producing purgation. Indeed some, as Sir A. B. Garrod, consider that its effects are best attained without purgation. and Garrod says that if cathartic action is required, it is better to combine some aperient with the colchicum, as when much purging and vomiting result from colchicum, nervous and vascular depression follow. I confess I like to secure a little action on the bowels by increasing the dose gradually, and it is not necessary to produce either violent purging or vomiting.

The preparation commonly used is the wine. In this country the wine of the seeds is no longer official, so that if the wine is ordered that of the root is dispensed. This is more powerful than the wine of the seeds. The dose of the latter is from ½ to 1 drachm or 1½ drachms during the attack, but of the root 15 to 30 minims, reducing the dose when nausea or purgation ensues.

The acetic extract of colchicum was a favorite preparation of the older physicians, especially Scudamore, who introduced it, and who considered its action milder than any other form. It is still sometimes used, and has the advantage that it may be put into pill form. Its dose is 1 to 2 grains.

I am not in the habit of using colchicum in the interval between attacks of gout, and indeed use it less in the acute attacks since the salicylates have come into use, but still value it highly. Colchicum has also been regarded as a diuretic, but later observations go to show that it does not increase the elimination of uric acid or urea. It should not be omitted that some of the physicians of the third quarter of this century who had large experience with colchicum thought it caused gouty attacks to become more frequent, but Garrod and Sir Thomas Watson, whose combined experience is probably greater than that of any other two men, both deny it. It may be worth while to add here what the latter said of its efficiency: "This drug has certainly the property of easing in an almost magical manner the pain of gout." "How it operates," he says, "is not so clear." We have seen that at the present day, however, a rational explanation is not wanting. chicene, the active principle of colchicum, is Its dose is  $\frac{1}{100}$  grain. The also employed. same dose may be employed hypodermically. The fluid extract of colchicum may be administered in doses of 2 to 6 minims.

The aperients commonly used in gout are the salines, of which the magnesium sulphate is the favorite. Sodium sulphate is also used, and it is the constituent of the most actively purgative mineral waters,—the Hunyadi Janos and Friedrichshalle mineral waters, already mentioned, which are now largely used instead. A favorite combination of the older physicians was magnesium sulphate two drachms, magnesium carbonate a scruple, suspended in an ounce of cinnamon-water, two or three times a day, until active purgation results. These two substances may be combined with colchicum, and with it make one of the forms of Scudamore's mixture, a popular gout medicine.

Colocynth is also employed as an aperient in gout, and advantage has been taken of this fact in the preparation of the secret remedy known as Lavelle's tincture, which is very largely used by the laity, and which undoubtedly has a very prompt effect in many cases of acute gout.

The following has been published \* as the composition of Lavelle's remedy, as determined by analysis:

	Parts.
Quinine	
Cinchonine	5
Colocynthin	2.5
Lime salts	
Water	85
Alcohol	100
Port wine	800

Doubtless it will be expected of me to make some allusion to a remedy which has recently been introduced as efficient in the treatment of gout. I allude to piperazin. I regret to say that I have been disappointed in it. In my early trials I thought it useful, but soon learned that it was less efficient than the salicylates and col-An acknowledged solvent for uric chicum. acid, when dissolved in water, its failure as a uric-acid solvent in the system is well explained by some recent experiments by Dr. Martin Mendelsohn, who placed small uric-acid gravel in a one-per-cent. aqueous solution of piperazin, in urine containing one per cent. of piperazin, and in urine derived from a person during the administration of uric acid. The first solution produced a decided effect upon the stone, reducing its bulk one-half and liberating parts of the organic framework, but the stone in the second and third solutions remained uninfluenced. Mendelsohn further placed on a filter a known quantity of uric acid, and passed over it the urine of a person who had taken 2 grammes of piperazin in the course of a day, and found that at the end of this time the uric acid weighed more than it did before the urine passed over it, so that instead of dissolving away the uric acid something additional was added to it.

It will be remembered, too, that Pfeiffer has shown that it is one of the peculiarities of the gouty diathesis that the urine possesses a marked "precipitability" for uric acid,—that is, it parts with its uric acid with great readiness,—and it possesses, further, a disposition to give off uric acid to the uric-acid filter above described in an especially high degree,† and that under the use of certain mineral waters, as those of Vals or

Fachingen, the urine loses this property. Now, if piperazin is an efficient agent to the end claimed, it ought to produce the same effect on the urine as the mineral waters referred to did. In very carefully conducted experiments, however, Mendelsohn showed that this was not the case. So that it is true of piperazin, as of other substances, that while in aqueous solution it dissolves uric acid, there is something in urine which interferes with this solvent power.

For the relief of the acute attack of gout, leeches, blisters, and cold have all been discontinued of late years, not only because they are useless, but also because their use has been followed by fatal attacks of the so-called internal gout. Warmth and moisture do, however, have a mollifying effect, which is increased if the liquid preparations of opium be associated. Cocaine, which might be expected to be useful, operates only through open surfaces.

All pressure by boots on joints disposed to gout should be carefully avoided, as well as injuries, as such influences undoubtedly act as predisposing causes. Muscular and mental fatigue are existing causes of acute attacks, and should be avoided by the gouty.

VENESECTION IN THE TREATMENT OF ENGORGEMENTS AND DILATATIONS OF RIGHT SIDE OF HEART.

READ BEFORE THE SECTION OF THERAPEUTICS OF THE PAN-AMERICAN CONGRESS.

By I. E. ATKINSON, M.D., BALTIMORE, MD., Professor of Therapeutics and Materia Medica in the University of Maryland.

TPON no point in therapeutics was there more settled conviction in the minds of medical men in the first half of the present century than in the matter of bloodletting. Open the works of almost any of the great medical lights of that period and one finds the testimony in its favor never uncertain, never In one form or another it was equivocal. easily the sheet-anchor of the remedial art. Yet a single generation—nay, even a decennium -saw it fall into disrepute, almost into complete desuetude. It is not my intention here to consider the influences that brought about this astonishing change, this unhesitating rejection of the experience of centuries, this discredit of the opinions and conclusions of those who in many respects still claim our reverence and admiration. It is an old story (and has its analogues in many phases of the history of our race) of a good thing abused, perverted, and misapplied, until turned into an instrument of such malignant power that the evil springing from it, for

<sup>\*</sup> Druggist's Circular, October, 1889.

<sup>†</sup> This property is possessed, according to Pfeiffer, by the urine of all healthy men, but not by that of women or children, but by gouty persons or those possessed of the uric-acid diathesis in an eminent degree.

a time at least, quite hid its true merit. completely has general bloodletting fallen into disrepute that it may be said safely that a majority of the medical men of the present generation have never seen, much less done, the operation of venesection. Yet throughout these years of its humiliation there have never ceased to be those who have held up the standard of venesection, though, for the most part, in so half-hearted, timorous a fashion that they have rather weakened their cause by the feebleness There has been some sign, of their defence. of recent years, of a disposition to reconsider the therapeutic claims of venesection in a judicial spirit, and from a clinical, not a theoretical, stand-point. Surely, at this date, partisanship and prejudice need form no factors in such a research, and although we can hardly expect a justification of the statement made so recently as 1860 by no less an authority than the late Professor George B. Wood ("Therapeutics and Pharmacology," etc., 1860, Philadelphia, vol. ii. p. 37), that there is no more important remedy than bleeding, perhaps none which so frequently saves life, it seems likely that we will find that our therapeutic predecessors were not so hopelessly in the wrong after all.

It is not my purpose to consider in this paper the general question of bloodletting. intend to refer briefly to but one of its aspects: one, however, in which the indications for its employment are so clear, its beneficial effects so prompt, remarkable, even life-saving, that there remain hardly any grounds for dis-I refer to the mechanical relief to be afforded an overtaxed, distended, and dilated right heart by the abstraction of blood. This procedure receives such abundant justification, both in theory and practice, that an apology might almost be expected for recommending it before such an assembly as this, especially since it has been advocated repeatedly with far more convincing argument than I shall be able to offer in this short paper, and more recently by Lasseur (Bull. Johns Hopkins Hospital, August, 1891) and Pye-Smith (Med.-Chir. Transac., London, vol. lxxiv.). The revolt against venesection, however, has been so wide-spread and complete. that it is only by persistent advocacy that we may hope to see it rehabilitated, even in its most important applications.

Overfilling and incomplete emptying of the right ventricle may be brought about by any persistent obstacle to the free passage of blood from this chamber to the arterial circulation. Nearest the right ventricle the obstruction may be in the pulmonary circulation, as from bron-

chitis, associated with the diminished vascular supply consequent upon the atrophic changes of emphysema, etc., or it may depend upon defects of the mitral orifice and valve; finally, but only after secondary and relative incompetence of the mitral valve, alterations at the aortic orifice and valve may prove the exciting cause. Of these influences, the mitral changes have most potency, mitral stenosis more notably, for reasons that are obvious and not necessary to be designated here; but in consequence of the more frequent occurrence of mitral insufficiency, the latter lesion will be found to be the exciting influence in most cases.

Engorgement and distention of the right side of the heart are not very prone to occur so long as hypertrophy of the ventricle is able to supply an increased energy sufficient to afford compensation to the obstructed circulation in front of it. It is only after failure of this muscular hypertrophy has begun, and weakening of power with dilatation and increased capacity of the ventricular chamber have set in, that the condition we are considering is apt to arise. This usually occurs by a gradual development after long-standing and slowly augmenting valvular defect, but it not infrequently is precipitated by sudden intervention of obstruction in excess of that already present. The most important of these intercurrent processes may be located in the lungs, as from a pneumonia, a bronchitis, especially in the presence of old emphysema. However occurring, whenever this condition is encountered, venesection. affords a remedial measure of remarkable power; but where the engorgement is the consequence of a rapidly developing obstruction to an already laboring right ventricle, its good effects appear at times to be almost magical. The clinical indications for venesection under the circumstances we are considering may be quoted from an excellent paper on the therapeutic value of venesection, by Dr. Pye-Smith, as "general venous congestion with arterial anæmia indicated by cyanosis with dyspnœa, turgid veins, swollen liver, albuminuria, pulsation in the jugular veins and at the epigastrium, functional incompetence of the tricuspid valve (sometimes indicated by a systolic murmur), and a weak, small, and fluttering radial pulse." The pathological chain of which these symptoms are the expression usually begins with an arterial anæmia having its origin in an unfilled or an imperfectly emptied left ventricle; unfilled, in consequence of an obstructed mitral orifice or an obstructed pulmonary circulation; imperfectly emptied, in consequence of an insufficient mitral valve. The blood, obstructed in

its onward passage in one or the other or all of these ways, banks up into the system of the right heart, the pulmonary artery, the right ventricle, the right auricle, and into the general venous system. The brunt of the struggle is with the right ventricle, which, unable to overcome the obstacle in front by its systole, distended during diastole by the increasing pressure of blood from behind, becomes overfull, stretched, incapable of orderly and vigorous contraction, and in immediate peril of succumbing to the burden thrown upon it. As the distention of this muscle increases, so does its power steadily diminish.

Many therapeutic measures are resorted to for the relief of this condition of passive engorgement, with greater or less success, but no measure will so safely, so pleasantly, so speedrly, so frequently afford relief, even avert impending death, as the judicious practice of venesection. By it the torrent of blood is checked and partially diverted, the ventricle, relieved of the pressure, contracts, gathers force and rhythm, and relief, often but temporary, rarely permanent, is secured. urally, in many cases all remedies fail and the patient dies; in many, again, the relief is only transitory; but in a fair number, where the circulatory obstruction is acute, as in the sudden bronchitis that at times surprises an old emphysema with its resulting weak heart, the relief will be permanent. Taken altogether, I desire to claim openly that in the conditions above described, where the danger to the life of the patient is rapidly developed and imminent, the letting of blood offers greater chances of relief than any other remedy.

From a number of cases of successful venesection for the condition under discussion I have selected the following:

Mr. W., unmarried, forty years old, a builder and contractor, of medium height and robust frame. Mr. W. had had a healthy youth and early manhood. He never had scarlatina or diphtheria. Some rheumatic pains in the anklejoint three years ago, but not severe enough to disable him. For years has been addicted to rather free alcoholic indulgence. He is of an active, energetic temperament. Was not thought to have heart-disorder until the preceding win-He never fainted nor complained of palpitations. Early last spring had occasion to consult a physician on account of dyspnœa. He became orthopnœic and mildly cyanotic, and had very feeble and irregular heart-action. This condition lasted a number of weeks, and he slowly improved and finally resumed work. There was said to have been no albuminuria

and no dropsy. He did fairly well until attacked by the prevailing influenza. This followed an ordinary course and left him with some bronchial catarrh. On January 8, 1890, he went out of doors, and on the 9th was seized with severe cough and dyspnœa. Symptoms of active pulmonary engorgement rapidly developed, and on the 11th, at 10 P.M., I was called to see him in consultation with Dr. L. McLane Tiffany. He was then sitting up in bed; livid; temperature, 103° F.; respiration, 55 to 60; pulse uncountable at the wrist, being extremely feeble, irregular, unequal, and frequent. His cough was almost incessant, and brought up a very copious amount of currant-jelly-like sputum, lacking, however, the tenacious appearance of ordinary pneumonic sputum: it was very free and liquid. He was breathing noisily and with great difficulty. Coarse and fine moist râles were heard all over the chest, quite masking the heart-sounds. There was no tubal breathing. Percussion was dull but not flat over both lower lobes posteriorly. There was no albuminuria. A hypodermic injection of 1 grain of morphine with the grain of atropine sulphate was given at once, and 12 drops of tincture of digitalis were given every third hour. A milk diet. 12th, easier; sputa still copious and deeply stained; orthopnœa; respiration, 48; temperature, 101° F.; cardiac pulsations, 120 to 140, very irregular, intermittent, and unequal, many pulsations not perceptible at the wrist; apexbeat felt in fifth intercostal space, two and a half inches to the left of left nipple; very little hearing impulse; cardiac dulness (relative) extends at level of the fourth rib, from the right border of the sternum, eleven centimetres; in fourth intercostal space, from one centimetre to right of right sternal border; towards the left, sixteen centimetres. Heartsounds heard with difficulty, but a systolic murmur, not loud, but of a rasping character, was detected. There was no albuminuria; no anasarca. During the 13th, 14th, and 15th there was no decided change; cough, dyspnœa, cyanosis very pronounced, and surface bathed in cold sweat; no nausea. Continued digitalis. Complained of intense pain in right inframammary region and hypochondrium; border of liver dulness two finger-breadths below costal margin; this region was quite tender to pressure. 16th, chest clearer; sputa losing color, but general condition very bad; some delirium; cyanosis increased; extremities cold; surface bathed in sweat; slight albuminuria; some ædema of ankles; expression very bad. Eight ounces of blood were drawn by cups from the right hypochondrium. This was followed

by immediate relief of pain and much easier respiration (42). Pulse slightly stronger, but systole still most incomplete. During this day took 8 drops of tincture of strophanthus every fourth hour, but his condition grew so rapidly worse that it was abandoned. When the cupping was done, death seemed imminent. Pulse almost imperceptible at the wrist; deep cyanosis; urgent dyspnœa; cold sweats; slight albuminuria. 17th, some general improvement in the morning, but symptoms all became aggravated during the day, and at 10 P.M. was in extreme distress. Pulse at the wrist o6, while at the præcordium 120 very unequal pulsations could be heard. Eight ounces of blood were rapidly drawn from the right arm. While the blood was flowing the patient expressed decided feelings of relief, and the radial pulse became at once stronger and more regular. He presently fell into a quiet sleep, in a semi-recumbent position. His complexion cleared, his surface became warm and dry, and the most comfortable night he had had followed. On the 21st the cyanosis had disappeared, as had also the albuminuria. He took nourishment well and gave every evidence of improvement. Respiration, 36; temperature, 100° F. Improvement was steady, and in two months he resumed business. The mitral murmur and cardiac irregularity persist, but there has been no return of the grave symptoms. At the moment of venesection the symptoms gave both Professor Tiffany and myself the impression of impending dissolution, but from that moment amelioration was as apparent to the patient and his attendants as it was to us.

ON THE TREATMENT OF CHLOROSIS.

By F. FORCHHEIMER, M.D.,
Professor of Physiology and Diseases of Children in the Medical
College of Ohio.

THEN pressed, it is with some difficulty that we are able to give a scientific definition of the term chlorosis. It is not especially difficult to say that there is a clinical entity which is called chlorosis; that this occurs especially in females at a certain age, accompanied by certain constitutional symptoms and others that are local. But after this is said, concisely or otherwise, it will be seen that, after all, there is lacking precision and definiteness, so that the predominant symptom of oligochromæmia, common to all cases of chlorosis, has been looked upon as settling the definition. Unfortunately, it is found that oligochromæmia is by no means characteristic of chlorosis, that it is found in all the anæmias, except the progressive pernicious form, and that, therefore, this one symptom cannot be looked upon as distinctive. We might add, that in health there may be temporary oligochromæmia, that the quantity of hæmoglobin varies very much as between healthy individuals and as between various times of the day in the same individual, and that oligochromæmia may be purely symptomatic of other conditions besides chlorosis.

In chlorosis the number of red corpuscles is not diminished; the reduction of hæmoglobin can be explained in two ways only, either as the result of deficient production. (hæmopoiesis), or increased destruction (hæmolysis). In an article on "The Intestinal Origin of Chlorosis" (American Journal of the Medical Sciences, July, 1893) I have shown that the blood process in chlorosis is that of faulty hæmopoiesis, and that this is proved by the deficiency of the end products of hæmoglobin destruction in the urine of chlorotic patients. This seems perfectly natural, in that, so far as we know, the destruction of red corpuscles and of hæmoglobin goes hand in hand, so that a destructive hæmolytic process could hardly exist which could destroy the red corpuscle without destroying the hæmoglobin. We can now extend our definition by adding that chlorosis is a blood disease, characterized by certain symptoms and due to faulty hæmopoiesis, so far as hæmoglobin is concerned. The faulty hæmopoiesis can be determined only by exact examination, first, of the blood (number of red corpuscles and quantity of hæmoglobin), and, secondly, of the urine, in determining the absence of urobilin (Gerhardt's test or the spectroscope). With Gerhardt's test in well-marked cases of chlorosis, the absence of reaction is sufficiently well marked to make the evidence very valuable. In patients in whom the percentage of hæmoglobin exceeds sixty per cent. (Fleischl), repeated examinations will have to be made, as I have found that, at times, the urobilin seems even to be increased. But even among these patients specimens are found in which urobilin is very much diminished. The importance of this diagnostic point cannot be too strongly insisted upon.

After this it becomes necessary, if possible, to detect the cause of this peculiar trouble, consisting, as it does, in lack of hæmoglobin formation, without cellular deficiency, or at least only such as will be explained as a secondary manifestation. As the result of a great number of observations (loc. cit.) it was found

that hæmoglobin is formed in large quantities in the intestine, both in man and some of the lower animals. For the present, it is not necessary to discuss the question whether it is formed in other places or not; it is sufficient to show that if the intestinal source of hæmoglobin were shut off either partially or wholly, there would be produced a condition of oligochromæmia. This assumption, I think, will be warranted by the figures.

In addition to this experimental evidence, I have found a toxic body in the urine of chlorotics, the exact nature of which it has been impossible as yet to determine, but one which, at present, justifies me in believing that it has its origin in the intestinal tract. Furthermore, that this body is the result of some perverse process, either bacillary or digestive, preventing the construction of the exceedingly complex hæmoglobin molecule. The other explanation that could be offered for its presence is that it is due to the splitting up of the albumin portion of the precursors of hæmoglobin which, under normal conditions, would have gone to the formation of hæmoglobin. However this may be, this toxic and probably compound body is found with certainty in cases of chlorosis in which the hæmoglobin falls below sixty per cent. (Fleischl), together with that form of urine in which the so-called urophæin test is absent, and in which it is impossible to find appreciable quantities of urobilin.

The fact must be insisted upon, then, that oligochromæmia is no more characteristic of chlorosis than glycosuria is of diabetes mellitus, or a membrane upon the throat is of diphtheria. The oligochromæmia must be of the kind described before, and must be accompanied by certain metabolic phenomena which are shown in the urine, and, secondarily, by the symptoms of the disease. As would be expected from the foregoing, it will be extremely difficult to find any characteristic evidences of chlorosis by ordinary examination. As a result, we find much confusion in terminology and great diversity in diagnosis. Where one physician will pronounce a case chlorosis, another will call it chloro-anæmia, a third simple anæmia, and my experience is that in many cases the true nature of the illness is not discovered at all, but the patient treated for hysteria or neurasthenia, and put through the ordinary routine treatments for these ailments.

In chlorosis we have two factors which produce all the symptoms,—the deficiency of hæmoglobin, and the presence within the blood of a toxic albuminous body. Up to the present is impossible to state with exactitude the

rôle played by one or the other, but it seems not unlikely that the individuality of the patient largely determines the predominant character of the symptoms. Thus, in a patient of hereditary neurotic tendency it takes very little to produce the symptoms of a neurosis, and the irritation of a toxic body as we find it in chlorosis (toxic only in large quantities) is sufficient to set up an irritation followed by any or all of the nervous phenomena in chlorotics. I am fully persuaded that, in a great number of so-called neurasthenics or hysterics, careful, frequently-repeated blood examinations will show this to be the etiology. It would not be difficult to go a step farther and claim that, as individuals differ, a moderate amount of chlorosis may be accompanied by very severe symptoms, especially on the part of the nervous system, on account of the presence of the toxic body, knowing, as we do, that the quantity of hæmoglobin can be reduced appreciably without being followed by manifestations.

In those cases in the adult in which the hæmoglobin is very much reduced—and I have put it at sixty per cent. or below (Fleischl)—there is present a train of symptoms due especially to faulty metabolism. The figure sixty per cent. has been taken because, in my experience in these cases, we have all the pronounced symptoms of chlorosis, while many individuals will have a reduction in hæmoglobin to nearly or about this percentage without causing the physician to suspect that so great a reduction exists. This is only an additional confirmation of the frequently-repeated statement of the importance and value of careful blood examinations.

This faulty metabolism is due to oxygen famine of the cells, concerning which we used to hear more than we do at the present day. It is but necessary to recall the fact of the importance of oxygen as a food, and that hæmoglobin is the body which carries it to the cells, to have placed before us the wide-spread and intense changes that may follow a lack of supply of this food. An appreciable reduction of hæmoglobin is always followed by a reduction in the respiratory function of the individual cells in the body; this, in its turn, affecting all the other functions. On account of the fact that the respiratory function is the most vital, it will be seen how even that function of the cell which, in a certain sense, is more important is bound to suffer. From this stand-point it will be easy to explain many of the symptoms of chlorosis without taking into consideration the toxic body at all; the functions of secretion, excretion, generation, irritability,

automatism, and general metabolism must, therefore, all become affected. upon the individual, one or more of these are especially marked for suffering, and therefore the individual differences in the symptoms of chlorosis, the one complaining especially of gastro-intestinal symptoms, the other of symptoms on the part of the nervous system, the third of trouble in the generative tract, the fourth of a combination of one or more, and so on. It is a mistake to suppose that these symptoms are characteristic of chlorosis; anything producing a decided diminution in oxygen supply will produce them; increased hæmolysis, diminished oxygenation from mechanical or circulatory causes, or even general cellular starvation in which the cells have lost their ability to take up oxygen in sufficient quantity.

With this cursory statement concerning the causation of chlorosis necessary to the conception of treatment, we now turn to the latter The remedies to be discussed are iron preparations, arsenic, blood preparations, and intestinal antiseptics. Without going into the various theories concerning the action of iron, it will be freely admitted that in a great many cases inorganic iron does increase the quantity of hæmoglobin in the blood. It matters very little how this is done, whether by absorption, by irritation of the intestinal tract, by prevention of formation of products of digestion (H<sub>s</sub>S), or otherwise. The fact remains that in a certain number of cases of chlorosis—it would not be far out of the way to say in the greater number of cases—inorganic iron given per os does cure the disease. . This can be determined by any one who will take the trouble to investigate the blood condition of chlorotics under this treatment. The researches of Kobert and his followers simply go to show that they have not found iron increased in the urine in those who have been taking iron by the mouth: the deductions drawn from these experiments are, apparently, perfectly logical. But when we come to consider that one milligramme is the quantity of iron usually excreted by a human being through the urine in twentyfour hours, and that this is by no means an invariable quantity in health, it will be seen that we are dealing with figures entirely too small to settle so important a question as iron absorption definitively. Furthermore, it must not be forgotten that all the iron taken up is not excreted, but in all probability large quantities are stored up in the liver for future use. Then there are other methods of elimination of iron (by the bile, the mucous membrane of the intestine) which altogether elude experimental

research, so that all experiments up to the present must be considered inconclusive. The clinical fact remains as a last appeal for demonstration to the proposition that inorganic iron given by the mouth increases hæmoglobin. But how is this done? It can be safely admitted that inorganic iron must be converted into an organic combination in order to form hæmoglobin. That this is largely done in the intestine I have shown in the paper referred to before. But, in view of some therapeutic evidences, I should hesitate to say that this is the only place in the body in which this conversion can take place. Numerous authors, German, French, English, and American, have shown that hypodermic use of iron is followed by increase in hæmoglobin; iron injected into the peritoneal cavity (Vachetta) or iron given by the rectum (Chalhoub) does the same. From this it would seem that the red corpuscle itself, or other cells in the body, have the property of forming hæmoglobin when iron is brought to them in the proper form. What this form must be it is difficult to prove, but all existing evidences seem to show that the inorganic iron must first be converted into organic iron before it can be utilized by the economy; certainly this is the regular way in which food iron is brought to the economy. The perfect foods (milk and eggs) contain appreciable quantities of organic iron, and the iron equilibrium of the body is readily maintained without requiring any free iron in addition, differing largely from the water or common salt equilibrium.

Having admitted that in the larger number of cases of chlorosis iron does cure, there remains the minority in which iron seems to be utterly without effect. Enthusiastic as authors are in iron therapy, it is admitted on all hands that there are cases of chlorosis which do resist this treatment. Again, according to individual experience, some are tempted to place the value of iron very high, others very low; at all events, the fact remains that all cases of chlorosis cannot be cured by iron; so that it is not the iron supply that is deficient, but the iron utilization that is at fault, since many times the amount of iron required by the whole blood quantity has been given daily. It seems, then, that besides giving iron in the food, when this remedy is given internally, it must act in another manner than by its simple presence. The form in which iron is given has, of late. been the subject of great discussion; the parties are divided into two camps, the one claiming that it is necessary to give iron in organic combination in order to get the best effects, the other that this is not material. The former is the most recent view, resulting from laboratory experiments, and especially those of Bunge and Kobert. Bunge isolated an organic iron compound from the yolks of eggs, and Socin found that in dogs it was absorbed, so that the quantity of iron excreted was increased. Control experiments made by Busch in Kobert's laboratory at Dorpat failed to verify this statement (those interested will find the whole subject thoroughly discussed in Arbeiten des Pharmakologischen Institutes zu Dorpat, Herausgegeben von Professor Dr. R. Kobert, vii., Stuttgart, 1801). From my own clinical experience, as well as from that of some of my friends, I do not hesitate to confirm the results of Busch, in that I have found hæmatogen without value in the treatment of chlorosis.

As a result of investigation, Kobert comes to the conclusion that certain reduction products of hæmoglobin will give better results than hæmoglobin itself, and he has, therefore, given to the world, through E. Merck, in Darmstadt, two bodies which he calls hæmol and hæmogallol, the former a zinc, the latter a pyrogallol derivative of hæmoglobin. Either one of these gives good results in the treatment of chlorosis, but, unless some other reasons than those advanced are given, they cannot be pronounced preferable to hæmoglobin itself. deed, in the method of treatment to be discussed, beef-juice, blood itself, or blood conserves do just as well as anything else. The most desirable of these preparations is that one which can be taken by the patient most readily for a long time. The new preparations are especially available, in that they can be given either in wafers or, as Kobert states, in chocolate tablets, the latter form being especially valuable for children. It would be useless to speak of the inorganic iron preparations at great length; there is no doubt that some act better than others (Blaud's pills); but it seems to me that such should be chosen as irritate the stomach least, are non-poisonous, and at the same time, when forced from their acid combination, will give rise to a substance which has a tendency to counteract the cause of chlo-Stockman (British Medical Journal, 1803), in a most interesting paper on "The Treatment of Chlorosis with Iron and some other Drugs," has given ferrous sulphide in keratin capsules for the purpose of effectually disposing of Bunge's theory of sulphuretted hydrogen by iron absorption. Only two cases were treated in this manner, but in these the results were so gratifying that they seem to verify the view taken by me, and certainly encourage further trial in this direction.

Arsenic can be looked upon as a valuable agent in the treatment of chlorosis. Doubtless, any number of cases of chlorosis could be collected that have resisted iron and have been relieved by arsenic. It seems more than improbable that it should take the place of iron in the hæmoglobin molecule; indeed, no such combination is known to exist; so that when it acts the effect upon hæmoglobin is an indirect The physiological effects of arsenic are so many-tending to improve digestion, the general nutrition, and its beneficial action upon the nervous system so forcibly insisted upon by Gubler-that, with the general rise in metabolism, hæmoglobin must, as is shown by clinical experience, be increased. In its effects upon hæmoglobin formation, I would lay especial stress upon its action upon digestion, notably upon the digestion in the small intestine; the anæmia of children, in whom we find such enormous variations in the quantities of hæmoglobin following intestinal troubles, is most effectually removed by arsenic prepara-Experiments which I have made with arsenite of copper have led me to believe that this combination is very valuable in such cases and also in adults, where, as is sometimes the case, the bowels are loose and the intestinal catarrh can be looked to for the cause of hæmoglobin diminution.

We now approach the last remedy to be discussed,—the intestinal antiseptics. From a theoretical stand-point, intestinal asepsis is an impossibility, due to many reasons,—the structure of the alimentary canal, the kinds and number of the micro-organisms found there, the nature of the food, and, more important still, the fact that air is constantly being introduced into the stomach and, naturally, into the small intestine. It was, therefore, not a matter of surprise to me to find one of my patients, whose stools had been made almost odorless by the internal administration of large doses of hydronaphthol and whose hæmoglobin was steadily advancing, develop a well-marked case of typhoid fever. But because great expectations have been entertained and not fulfilled is no reason why partial intestinal antisepsis cannot be accomplished. The bacteria of putridity really seem to be affected by some of these remedies; I am now referring to the results of clinical investigation, not of test-tube experiments, in which so many things have succeeded that have failed us in practice. Starting, then, with the idea that in chlorosis hæmoglobin formation was prevented either by abnormal putridity or hydrolytic action in the small intestine, perverse in its nature, it seemed

natural to select a number of cases of chlorosis for treatment, to see whether the quantity of hæmoglobin could be increased without the use of iron. I have used, experimentally, many antiseptics,—creosote, hydronaphthol. salol, arsenic preparations, bismuth, and tannicacid combinations,—and have finally settled down to the routine use of the four former remedies. In the paper referred to above I state (loc. cit.) that hæmoglobin can be increased in every individual on whom I have tried it (eleven cases) by the administration of either salol or hydronaphthol, the latter being, upon the whole, more efficacious in that the rise in hæmoglobin was more rapid. Since writing this paper I have combined intestinal antisepsis with administration of iron-containing substances, and the results can be stated as follows: The best possible results controlled by blood analyses as to time, quantity, and permanency, are obtained by combining an antiseptic with a blood preparation. I give 5 grains hydronaphthol or salol before meals and the same quantity of hæmogallol immediately after the When these preparations cannot be obtained, large quantities of beef-juice can be substituted, or any of the many preparations which contain blood; precaution must be taken to see that they really do contain blood in case the latter are used. In children I have given up the use of salol for this purpose, and in

b

5

i

adults it is used with great caution; in the former it has produced mild carbolic-acid poisoning, and the latter have shown, in several instances, evidences of carbolic acid in the urine. Whether or not salacetol will• be a perfect substitute for salol remains to be seen.

Second in utility comes the administration of the antiseptic before the meal and some form of iron after the meal; carbonate of iron has given better results than any other preparation I have used.

It is difficult to decide as to the relative merits of iron or antiseptics when given separately; it is certain, however, that the antiseptics will succeed when given alone in many cases in which iron fails completely. But this does not invalidate the previous statement that in the great majority of cases iron used alone succeeds in giving relief, though not as promptly as the antiseptics. I have purposely refrained from mentioning sulphur, as my own investigations were begun before its introduction as a method of treatment in chlorosis. It is not going too far, however, to state that its employment with success seems to further strengthen the views that have been stated above concerning the etiology of chlorosis.

In conclusion, I have appended the report of several cases treated with the various combinations mentioned before.

		,	Remarks,
Miss A., aged 19; red corpuscles 4,225,000 First week	HC. 70. HC. 75. HC. 85. HC. 90.*	Salol.	Menstrual difficulties; constipation; menstrua- tion,* steady increase in HC.
Miss S., aged 20; red corpuscles 3,766,000 First week	HC. 50. HC. 45.* HC. 55.	Hydro- naphthol.	Menstruation * always regular; attacked with ty- phoid fever, from which she recovered.
Miss B., aged 24; red corpuscles normal  December 29, 1892  January 4, 1893  January 26, 1893  February 14, 1893  February 22, 1893	HC. 75. HC. 80. HC. 75.*	Hydro- naphthol and blood prepara- tion.	Menstruates irregularly, sometimes every three weeks; menstruated.* Obstinate case; has been taking tonics (ferruginous) for years; has been well ever since discharged.
Mrs. E., aged 30; red corpuscles normal  November 28, 1892  December 17, 1892  January 7, 1893  January 18, 1893  February 13, 1893  February 27, 1893	HC. 60. HC. 70. HC. 75. HC. 85.	Hydro- naphthol and hæ- mogallol.	Hysteric; has been treated by rest-cure, etc.; has taken large quantities of iron; has had several operations upon genito-urinary organs. Recovered completely, but has had to be put upon treatment once since her first discharge, with the same beneficial result as before.

# THE USE OF NITRO-GLYCERIN IN ARTERIO-SCLEROSIS.

By Thomas G. Ashton, M.D.,
Demonstrator of Clinical Medicine in the Jefferson Medical College
and Chief of the Out-Patient Medical Department in the
Jefferson Medical College Hospital.

DUT little more than twenty years have elapsed since arterio-sclerosis was first demonstrated to be a distinct and definite disease, and, as is well known, it is to Gull and Sutton we are indebted for this addition to our medical knowledge.

It is necessary for us to fully understand the nature of arterio-sclerosis in order that we may clearly appreciate the reasons advanced for the employment of nitro-glycerin in its treatment. Equally important, also, is it for us to have a clear idea of the drug's physiological actions.

The most commonly accepted theory explaining the manner of the development of arterio-sclerosis is that advanced by Thoma in a number of articles published in *Virchow's Archives*. Thoma finds the development of the disease to depend upon a series of conditions which conform to the following law, viz.:

A slowing of the blood-current in an artery that is not at once and completely counteracted by a proportionate contraction of the media leads to a new growth of connective tissue in the intima, which lessens the lumen of the affected vessel and thus restores the normal swiftness of the blood-current more or less completely.

According to this law, therefore, the lesion has its origin in the media, which, in some way not known, has lost its tone. As a result of this impairment of the elasticity of the media the artery dilates, and, as a consequence, the normal swiftness of the blood-stream is les-The slowing of the blood-current produces, in turn, a hyperæmia of the vasa vasorum and a new growth of connective tissue in the intima, with which there is subsequently associated a similar formation in the media and ad-So soon as the growth of new tisventitia. sue reaches such dimensions in any situation that the normal swiftness of the blood-current is thereby re-established, the sensitive nerves are restored to their normal condition, the hyperæmia of the vasa vasorum disappears, and no new tissue forms in the intima until the blood-current again undergoes changes of speed and again makes operative the various factors originally involved in the production of

Now, let us see how these changes in the arterial walls will affect the various tissues and

organs the nutrition of which it is the function of the blood-vessels to provide for. As this degeneration is characterized by a more or less distinct swelling, the compensatory thickening of the intima projects to some extent into the lumen of the vessel and thus interferes with the bloodcurrent. In the same manner is the orifice of the blood-vessel narrowed at its point of branching off from the parent vessel. "Various and grave disturbances of nutrition may, of course, result in the organs to which these branches go. and it is conceivable that often thus a vicious circle is established. Thus, the diseased arteries supply less blood to a given organ than its proper nutrition requires, and local degenerations ensue in the organ. These changed conditions call for still less blood, and there results a further disturbance in the rapidity of the current in the affected artery. This causes further changes in the vessel's intima" (Peabody).

Thus we will find that the same vicious circle that becomes established in the various organs of the body involves with them the arteries themselves. The vasa vasorum, sharing in the general sclerotic change, supply less blood to the arteries than is required for their proper nutrition; further degeneration of the arterial walls follows, calling for less blood for nutritive purposes, which produces, in turn, a slowing of the blood-current in the vessels supplying the arteries; consequently the intima of these vessels becomes the seat of further degenerative changes.

We have found, therefore, that we are dealing with a disease one marked feature of which is a mechanical interference with the blood-current, due to progressive narrowing of the lumen of the blood-vessels, and that a necessary result of this obstruction is a lessening of the supply of blood essential to the nutrition of the tissues, resulting in various tissue degenerations.

Let us see now what are the properties of the drug with which we propose, if not to permanently arrest the progress of the disease, at least to ameliorate its most striking and annoying symptoms.

When a dose of nitro-glycerin large enough to produce the physiological effects is taken, there follow more or less flushing of the face and a feeling of fulness of the head which, in some individuals, is accompanied by dizziness. These manifestations are the result of a dilatation of the superficial vessels, which, according to Brunton, is due to weakening or paralysis either of the muscular walls of the arterioles themselves or of the vaso-motor ganglia in or near them. That the effects of the drug are not due to its action upon the sympathetic acting upon the muscular structure of the arteries

through the vaso-motor centre, he demonstrates by showing that the nitrites lower the bloodpressure in animals even after the cord has been divided just below the medulla.

Nitro-glycerin, therefore, lowers blood-pressure by producing a dilatation of the arterioles, and it is upon this dilatation of the arterioles that the value of the drug in the treatment of arterio-sclerosis depends. We found that in arterio-sclerosis, because the tissues receive too little blood for their proper nutrition, local degenerations occur, and that these local degenerations, disturbing again the equilibrium of the circulation, cause still further sclerotic changes to occur in the arterial walls. causing a dilatation of the blood-vessels, and thereby supplying the tissues with a larger amount of blood for their nutrition, not only will the progress of degenerations in the various organs and tissues be retarded, but the course of the disease will also be arrested in the arteries themselves by supplying them, in the same manner, with a larger quantity of blood.

The most important clinical manifestations of arterio-sclerosis are directly due to the condition of the blood-vessels which interferes with the blood-supply to various organs.

The following cases, briefly cited, will give a clear idea of the chief of these symptoms and to what extent nitro-glycerin may be relied upon for their relief.

Case I.—J. McL., aged twenty-eight; a lumber salesman. Family history negative. Patient for past ten years, in following his occupation, has had a very exposed life, and in addition has been subjected to arduous railroad travelling which, in the course of a year, covered many thousands of miles.

The symptoms mostly complained of were vertigo, headache, and palpitation of the heart. The examination of the heart showed no enlargement of that organ; the first sound, however, was louder and longer than normal, and the second sound was markedly accentuated. The radial at the wrist showed decidedly thickened walls. Arterial tension was increased.

Urinalysis showed albumin to be present in small quantities. The average amount of urine passed in twenty-four hours was seventy ounces. The microscope revealed hyaline casts.

Nitro-glycerin was administered, and pushed until physiological effects were produced. Its effect upon the headache, vertigo, and palpitation was almost immediate, and in three months the albumin and casts had entirely disappeared from the urine. The drug was then suspended. In two months, however, the patient returned

with the original symptoms present and albumin and casts again in the urine. Nitroglycerin was again administered with the same results as upon its previous exhibition. With occasional intermissions, the patient was kept upon nitro-glycerin for the period of one year. It is now over a year since treatment was suspended, and there has been no reappearance of the albuminuria or other symptoms.

CASE II.—P. C., aged forty-five; a tailor. Family history not obtainable. Patient in appearance a man of fully sixty-five years of age. For many years had habitually used alcohol to excess. Complained of headache, intense vertigo, causing him at times to fall in the street, and impairment of memory. An eye examination showed some recent and many old retinal hemorrhages. Urinalysis revealed albumin; quantity of urine voided in twenty-four hours increased; microscopically were found hyaline and some granular epithelial casts. The superficial vessels showed a marked degree of sclerotic change, and arterial tension was greatly increased. The heart was considerably hypertrophied; first sound prolonged and booming in character, and second sound markedly accentuated.

The patient was first put upon treatment over three years ago, nitro-glycerin being the remedy selected. While no curative result has been obtained, yet the drug accomplished an undoubted retardation in the progress of the disease, in addition to the almost complete disappearance of the cerebral symptoms, including a marked improvement in the memory.

The above cases, selected from a number that have been under observation, will suffice to illustrate the uses of nitro-glycerin in arterio-sclerosis.

As previously stated, the chief symptoms of arterio-sclerosis are due to the malnutrition of various organs resulting from a lessened bloodsupply; nitro-glycerin relieves these symptoms by increasing the blood-supply of any given tissue. The cardiac hypertrophy, however, so common an attendant upon this disease, is caused by increased peripheral resistance. By lowering the blood-pressure and, according to Bartholow, by removing the inhibition exercised by the pneumogastric nerve, thereby lessening the work of the heart, nitro-glycerin results in relief of this condition. The advantages from the use of the drug in attacks of angina pectoris are too well known to require discussion.

Because nitro-glycerin lessens arterial tension and thereby diminishes the amount of urine voided and lessens the output of albumin, and because it increases the blood-supply to the kidneys and therefore improves their nutrition and prevents further degenerative processes, is its exhibition advantageous in the renal changes accompanying arterio-sclerosis.

Nitro-glycerin is best administered in the form of a centesimal solution, or as tablet triturates, each containing  $\frac{1}{100}$  grain of the pure drug.

Inasmuch as the susceptibility to the action of the drug varies very greatly, the dose cannot be stated in advance. It is therefore advisable to begin with a dose of  $\frac{1}{100}$  grain, watching its effects, and increase it until the physiological actions of the drug become manifest. In some individuals small doses will continue to maintain the physiological effects of the drug, while in others, as in a case some time since reported by Dr. D. D. Stewart, of Philadelphia, a remarkable tolerance, even to massive doses, becomes established. According to my own experience, those cases respond best to the use of the drug in which small doses continue to maintain its physiological manifestations.

The effects produced by nitro-glycerin upon the pulse vary somewhat, though not materially, in duration in different individuals. In one of my cases the effects of a dose just sufficient to produce the physiological actions did not disappear from the sphygmographic tracing for nearly three-quarters of an hour. According to Murrell, however, whose observations upon the subject have been made with great accuracy and have come to be regarded as authoritative, the tracing resumes the normal in less than half an hour. As the effect of the drug is but transient, therefore, the interval between the doses should not exceed two or three hours.

Nitro-glycerin tends to arrest the oxygencarrying function of the red blood-corpuscle, and it is therefore important not to give it in doses larger than necessary to produce the desired effects, and during long-continued courses of the drug to interpose frequent periods of abstinence from its use.

Arterio-sclerosis is a progressive disease, and it is not claimed, therefore, that nitro-glycerin will effect a permanent cure. It is claimed for the drug, however, that it will retard the progress of the affection and alleviate many of its most distressing and serious manifestations.

### REFERENCES.

Aulde: "Notes on New Remedies," New York, 1890-91, iii. 31-34.

Bartholow: Philadelphia Medical News, i. 1884.

Brunton: Bartholomew Hospital Reports, 1876. "Text-Book of Pharmacology, Therapeutics, and Materia Medica."

Burroughs: London Lancet, 1889, i. 1238, 1297.

Cohen: Philadelphia Hospital Reports, 1890, i. 158-164.
Councilman: Transactions of the Association of American Physicians, Philadelphia, 1891, vi. 179-199.

Crook: New York Post-Graduate, 1887-88, iii. 91-99. Eshner: Philadelphia Medical and Surgical Reporter, 1891, lxiv. 412-414.

Loomis: International Medical Magazine, Philadelphia, 1892, i. 49-51.

M'Crorie: Glasgow Medical Journal, 1892, xxxviii. 94, 165.

Murrell: London Lancet, 1879, i. 80.

Osler: "The Principles and Practice of Medicine," 1802.

Peabody: Transactions of the Association of American Physicians, Philadelphia, 1891, vi. 154-178.

Ross: Montreal Medical Journal, 1891-92, xx. 904. Stewart: Philadelphia Polyclinic, 1888-89, vi. 171.

Thoma: Virchow's Archiv, xciii., xcv., civ., cv., cvi., cxi., cxii., cxiii.

ANTISEPSIS IN CATARACT EXTRACTION.
A LECTURE DELIVERED AT THE PHILADELPHIA POLYCLINIC.

By G. E. DE SCHWEINITZ, M.D.,

Clinical Professor of Ophthalmology in the Jefferson Medical College;
Professor of Ophthalmology in the Philadelphia Polyclinic;
Ophthalmic Surgeon to the Philadelphia Hospital.

N discussing with you this evening the measures best suited to the operation for the extraction of cataract in order to secure normal healing of the wound, we naturally turn to those which an ever-accumulating experience has demonstrated are most potent to destroy, or prevent the entrance of, septic organisms. It would be interesting, did time permit, to trace the gradual development of the present status of ocular antisepsis. How strange it would appear were an operator now to perform extraction under the carbolic spray, or cover his patient's face with the cumbrous dressings of the early antiseptic days! And yet not many years have elapsed since just this unwieldy paraphernalia would have been considered of the same paramount importance which we attach to the more dainty, and probably more effectual, methods of the present

Ophthalmic surgeons are ever ready to acknowledge the great debt which they owe to the splendid achievements of antiseptic general surgery, but it must be remembered that operations on the eye, as exemplified by the extraction of cataract, bear a peculiar relation to the sources of contamination. I cannot better illustrate this than by quoting a sentence written by Knapp in 1886: "The operations on the

eyeball are mostly small; the territory is so well protected that after the closure of the lids the conditions resemble pretty closely those of a pure subcutaneous operation; furthermore, the conjunctival sac is constantly bathed in an antiseptic fluid,—the tears; there is little occasion to contaminate the wound with hands, dressing materials, or instruments difficult to keep clean; the operations are soon over, and therefore exposed to injurious influences for a short time only-all this explains why the results obtained by careful operations without the use of antiseptic agents have not been inferior to the results of those that have imitated the antiseptic methods of general surgery." This sentence is inserted, not to cast doubt upon the value of antiseptic surgery, but simply to show that while we strive to appropriate everything from its advanced methods applicable to the field of operation in the extraction of cataract, the ophthalmic surgeon must not be content to trust to antiseptics alone for good results. quote again from Knapp: "The therapeutic problem is: To operate in such a way that no mortification by bruising occur, and where this cannot be avoided, to take such measures as to prevent the putrefaction of the bruised partantiseptic treatment." Therefore, when we combine correct technique and proper asepsis, we are in the best position to secure the most favorable results.

It is the purpose of the present lecture to describe various measures which are at present pursued in order to secure this proper asepsis, taking for granted that in every operation the manipulations are in accordance with those principles and practices which abundant experience has proved, from a mechanical standpoint, to be essential. You well know that the character of the tissues involved in many eye operations precludes the propriety of employing powerful germicides in the manner in which they may be used by general surgeons, but all the principles of clean surgery, and the main practices of antiseptic surgery properly modified to suit existing circumstances, are applicable and necessary in ophthalmic operations.

Preparation of the Hands of the Operator and Assistants.—This, when it relates to general surgery, and particularly that form of surgery which deals with the abdominal viscera, is of the utmost importance. The tendency at the present time, in dealing with wounds belonging to this class of operative work, is not, as was once the case, to flood them freely with strong germicidal solutions, which of themselves are dangerous to the patient's general condition, and probably detrimental to the rapid healing

of wounds, but to see that no septic organism or cause for mortification is introduced into the area of operation by the hands of the surgeon. Hence a large amount of experimental work has been performed in order to find the best method for rendering sterile, as nearly as possible, the hand of the operator, which is bound to come in contact with the tissues themselves. Fortunately, while the ophthalmic surgeon will use due caution that his hands are clean, they do not in the operation which we are discussing come in contact with the operative wound. Therefore he may select one of several well-recognized methods. The following is satisfactory: Scrub the hands thoroughly with soap and water; then clean the spaces beneath and around the nails; soak the hands in ninety-five-per-cent. alcohol for not less than one minute; on removing them, place them without drying in a solution of 1 to 1000 corrosive sublimate, and allow them to remain there for at least one minute.\*

Preparation of the Skin in the Region of Operation.—Again, we need not review the comparative value of the methods in this direction with the same nicety that would be required were we discussing an operation in general surgery. The object is to have the surrounding skin clean, but, as it is not brought in contact with the wound, nor incised during the operation, the same apprehension that obtains in the first instance does not pertain to the operation of extracting cataract. The following method is perfectly safe: The skin should be treated first with soap and water, then with alcohol, and finally with corrosive sublimate, 1 to 2000. These irritating substances must not enter the conjunctival sac, but the face, surface of the closed lids, eyebrows, brow, and scalp should be thus prepared. The parts should be kept covered for several hours before the operation with squares of gauze soaked in a bichloride solution (1 to 5000).

Preparation of the Conjunctival Cul-de-sac and Area of Operation.—This portion of the preparatory treatment presents the greatest difficulties. Even if it were possible, under any circumstances, to secure absolute sterilization of an area by means of powerful germicides, this would be impracticable in ophthalmic work, because the cornea and conjunctiva, or the parts to be disinfected, could not tolerate such solutions in sufficient strength. For example, Stroschein,† after referring to the

<sup>\*</sup> Consult "The Aseptic Theory and its Practice," by J. William White, M.D., University Medical Magasine, vol. i. p. 206.

<sup>†</sup> Graefe's Archiv, xxxix., Part I., p. 256.

fact that bichloride of mercury is the most popular antiseptic under such circumstances in solutions of I to 5000 or I to 4000, and that, according to the experiments of Weeks, it destroys the staphylococcus pyogenes and streptococci in from two and one-half to three minutes, points out that contact of this drug with the cornea and conjunctiva for such a length of time must necessarily be detrimental to these structures, and, moreover, that the time required to destroy the cocci in mucous membrane is considerably greater than in the test-tube of a laboratory.

Again, Bernheim,\* experimenting with various methods of ocular antisepsis (not only bichloride of mercury) on the basis of numerous culture experiments, has demonstrated that we have no means of entirely freeing the conjunctiva from the micro-organisms to be found there, even in its normal condition, although with proper methods of disinfection their number may be reduced and the vitality of those which remain weakened for several hours.

Touching the point of the micrococci which are present in the normal conjunctiva, it should be remembered that they exist in great numbers, and that for various reasons they are not always non-pathogenic. My friend, Dr. Joseph McFarland, who has worked much in this field. writes me that he has found ten varieties of various micro-organisms and from six to ten of micrococci; and among the latter, staphylococcus pyogenes, both aureus and albus, is not a stranger to the normal eye. He has also discovered a micro-organism closely corresponding to Dr. Welsh's staphylococcus epidermidis albus, which is thought to be an attenuated form of the staphylococcus pyogenes As Dr. McFarland points out, the variety of micro-organisms found in the eye varies with the environment of the individual. There is probably no organism normal to the eye, because those found simply represent such as have accidentally obtained a resting spot in the folds of the conjunctiva. in the normal conjunctiva we deal with microorganisms more or less constantly present, both pathogenic and non-pathogenic, with others that readily find access to it from the neighboring naso-pharynx, and finally with those which are freely present on the margins of the lid, a position in which they are always in greater excess than in the conjunctival sac itself, and from which they readily migrate to the conjunctiva and become a source of infection.

We know that we cannot perfectly sterilize either the palpebral edges or the conjunctival cul-de-sac for the reasons already stated. The object is to reduce the vitality of the microbes that cannot be washed away, and the mechanical effect of the fluids used is perhaps quite as potent as any possible germicidal value which they can exercise. Hence there is no object in using a strong germicidal solution, or one that is likely to be deleterious to the delicate epithelium of the corneal surface. It has been abundantly proved that excellent results accrue after the irrigation of the cul-de-sac with so mild a drug as boric acid, which, as you know, is scarcely antiseptic at all, and consequently it is not improbable that the same effect would follow the use of a sterile physiological salt solution.

Therefore, for irrigating purposes we may employ, provided the fluid reaches all portions of the conjunctival cul-de-sac and thoroughly scours out the folds of the conjunctiva, boric acid, four per cent.; or physiological salt solution, which may be prepared by adding a heaping teaspoonful of salt to a pint of water sterilized by boiling. If an antiseptic fluid is preferred, one of the following: bichloride of mercury, never stronger than 1 to 5000, and preferably 1 to 10,000, because, as has been demonstrated, its germicidal value is doubtful and in strong solution its deleterious action is certain; cyanuret of mercury, particularly advocated by Chibret, † in a strength of 1 to 1500 added to 1 to 7000 of sodium chloride; or trichloride of iodine, recommended by Pflueger 1 in a solution of 1 to 5000. Many other antiseptics might be mentioned in this list,-for example, biniodide of mercury, advocated by Panas and by Fenton, of this city; aqua chlorinata, which has been much praised by Schmidt-Rimpler in various ocular inflammations; weak solutions of carbolic acid; and the recently-described formic aldehyde, declared by Valude § to be non-irritating in solutions of 1 to 2000, and which is supposed to have particular value in disinfecting conjunctivas because its effect is lasting, more so than that of bichloride. In cases of patients destined for operation, Valude has performed disinfection with sublimate (1 to 2000) on one of the eyes, and on the other with formic aldehyde in the same dose. The conjunctivas washed with aldehyde were sterile fourteen times out of sixteen, while with sublimate the

<sup>\*</sup> Thèse de Zurich, 1893. Abstract in Annales d' Oculistique, July, 1893.

<sup>†</sup> Recueil d' Ophthalmologie, August, 1893, p. 507.

<sup>†</sup> Ibid., May, 1892.

<sup>&</sup>amp; Revue Generale d'Ophthalmologie, July, 1893.

same fact was noted in only half the cases. We should wait for confirmatory evidence, however, both clinical and experimental, before endorsing the drug.

It is impossible to completely sterilize the cilia. This has been proved by Bernheim, Stroschein, and numerous other experimenters, no matter whether the washing is done with a germicidal lotion or with a physiological salt solution. Hence, careful cleansing with soap and water, followed by the salt solution or one of the antiseptics mentioned, accomplishes the only practical result,—namely, diminution of the vitality and the number of cocci.

Preparation of the Instruments.—I will not occupy your time with a discussion of the great variety of substances which have been used for the purpose of sterilizing instruments. The chief difficulty is that sharp instruments, particularly the cataract-knife, are readily dulled by long contact with any germicidal fluid. All sorts of ingenious devices are at hand, and all of the various fluids have from time to time received attention; but recent experiments, particularly those of Nuel\* and Stroschein† demonstrate that boiling is perfectly satisfactory, especially if a two-per-cent. solution of carbonate of sodium is added to the water.

Boiling, however, is also likely to spoil the edges of sharp instruments. Hence, Stroschein believes that it is sufficient to rub them with cotton-wool soaked in a mixture of equal parts of alcohol and ether, and subsequently to wash them in a five-per-cent. solution of carbolic In a series of experiments made with Graefe's and Beer's knives the instruments were infected with pus or cultivations of pyogenes aureus. They were then left to dry and subsequently disinfected by rubbing with wool soaked in a mixture of equal parts of alcohol and ether and a few drops of ammoniac. After this they received a fresh rubbing with another piece of wool soaked in a five-per-cent. carbolic-acid solution, the handle being similarly treated, and they were finally placed in a sterilized salt solution. This treatment secured asepsis in every case, except where the instrument-maker's name was stamped on the blade, the unevenness thus produced rendering perfect sterilization difficult.

When the instruments are removed from the boiling solution they may be placed in a bath of physiological sterile salt solution or, better, in absolute alcohol. Now, although alcohol is

not an active germicide, it is a good preservative; indeed, in spite of the assertion of some excellent text-books, absolute alcohol is not without germicidal properties, except for sporebearing bacilli. Sternberg has found that pus cocci were destroyed by forty-per-cent. alcohol in two hours, but ninety-five-per-cent. alcohol is without effect on broken-down beeftea in forty-eight hours. Yersin demonstrated that absolute alcohol would kill tubercle-bacilli in pure culture in five minutes, and a large excess of absolute alcohol mixed in the sputum will kill these germs in twenty-four hours. In the experiments of Emil de Schweinitz. eighty-five- to ninety-five-per-cent. alcohol was sufficient to destroy the vitality of hog cholera and swine plague germs in cultures in twentyfour hours. Therefore we may with safety put the instruments in absolute alcohol and allow them to remain in the bath until ready for use. A fine knife, however, subjected to the action of absolute alcohol for a long time will lose its Hence the bath should not exceed twenty minutes, and if this is too long the Stroschein method may be substituted.

Preparation of the Dressings.—I am in accord with the statement of Nuel that the impregnation of dressings with antiseptic substances is far from satisfactory, especially when such are bought ready-made from the various Sterilization with steam is satisfacshops. tory. If a wet dressing is desired, the fabric may be soaked in one of the antiseptic fluids, usually bichloride (1 to 5000), or in a physiological salt solution which has been sterilized by boiling. Bits of gauze prepared by sterilization with steam are neater, cleaner, safer, and in every way more desirable than cotton for removing blood, etc., from the area of operation. No one is inclined to use sponges, which long since have been relegated to the background. If the lighter forms of cataract dressing are applied, such as isinglass plaster, or small wads of cotton held in place by strips of surgeon's silk isinglass plaster, these should be properly disinfected in the manner indicated before application.

Preparation of the Fluids used, and particularly the Alkaloidal Collyria.—The facility with which various fungi grow in many lotions commonly used in the treatment of ocular diseases, and particularly in solutions of alkaloids,—cocaine, atropine, and eserine,—renders it necessary to pay strict attention to the best methods of sterilization under these circumstances. A number of methods have been practised, which may be summarized as follows: Sterilization by heat, by the addition of an

<sup>\*</sup> Revue Générale d'Ophthalmologie, May, 1893.

<sup>†</sup> Loc. cit.

antiseptic, by the combination of these two methods, and by the chemical synthesis of alkaloids with antiseptic acids. The last method is not satisfactory.

Taking cocaine as an example, it may be prepared by adding to it a 1 to 5000 solution of bichloride of mercury, or 1 to 1000 of oxycyanide of mercury, one-half per cent. of carbolic acid, four per cent. of boric acid, thymol in the form of thymol water, chloroform water, or formic aldehyde, as recommended by Valude. As Francke has shown, sublimate (1 to 10,000), oxycyanide of mercury (1 to 1000), and thymol water surpass others in their potency against the staphylococcus pyogenes flavus. The best method of all is to boil the solution, and then preserve it for use by adding a portion of sublimate (1 to 10,000), which renders it sufficiently aseptic for the space of one-half to one hour.

The bottles and pipettes should be sterilized by boiling and mechanical cleansing; an ingenious combination of flask and pipette has been devised by Stroschein.\* This is a blownglass bottle constructed with a dropper, which may be directly exposed to the flame, thus rapidly sterilizing the bottle and its contents. The pipette has two conical ends, and is introduced into the neck of the bottle point upward, the rubber head being removed before the reversal. If the collyria are to be boiled, the small tube gives vent to the steam, which, passing through it, at the same time sterilizes it.

A number of so-called antiseptic droppers have been devised, one well-known pattern consisting of a combination of the dropper and glass stopper in a single piece of glass. All these devices are ingenious, but they do not secure the introduction into the eye of an aseptic fluid, because, as has been proved over and over again, the water in which the drug is dissolved may not be clean, and the solutions of the alkaloids, even when freshly prepared, will usually yield a growth of fungi and various micrococci in culture media. In a series of experiments which I have made in conjunction with Dr. E. A. de Schweinitz, of Washington,† it was abundantly shown that unclean solutions which find their way into the anterior chamber -for example, after section of the cornea-are capable of speedily originating a destructive inflammation of the uveal tract, terminating in panophthalmitis. This is true of any alkaloidal solution, but especially of cocaine, and, moreover, we were able to show that boric acid itself, when not freshly prepared, may be the medium of the most virulent contamination.

Causes of Failure.—It is hardly necessary in this audience to enumerate the most important contraindications for cataract extraction, even in the presence of the most perfect antisepsis. No one would wish to extract a cataract if there were an active blepharitis, conjunctivitis, dacryocystitis, or aggravated naso-pharyngitis. It goes without saying that these must be removed or their virulence reduced to the lowest ebb before extraction is permissible.

But even in reasonably healthy eyes and ocular surroundings the contamination of the wound may take place by bringing the edge of the eyelid in contact with the corneal section. We know how impossible it is perfectly to free this margin from cocci and bacteria. Therefore, the practice of expelling the cataract by rubbing the cornea through the lid is to be deprecated.

Even in the absence of active lachrymal disease, no case should be operated upon without an exploration of the lachrymal points, lachrymal sac, and nasal duct, and the simple experiment of pressing over the region of the sac to see if there is any accumulated secretion will be the means of avoiding many an awkward experience.

Not enough attention, in my judgment, is paid to the naso-pharynx. If there is nasopharyngeal irritation, treatment should be instituted, and I would advise the spraying out of these passages for a day or two before the extraction is undertaken, either with a mixture of listerine and Dobell's solution, or, on the recommendation of my colleague, Dr. Arthur Watson, with equal parts of water and peroxide of hydrogen, which flushes out these passages and probably, largely by mechanical effect, gets rid of infectious material. Independently of the fact that chronic bronchitis, by virtue of the cough which it produces, is a complicating circumstance, it is also perfectly possible that pathogenic germs may migrate from the lower respiratory tract and destroy the effects of an operation. I have in several cases administered, in addition to local treatment with sprays, etc., capsules of the oil of eucalyptus, which is certainly good as a stimulating expectorant, and possibly plays the part of a mild antiseptic.

Finally, I come to the cases of failure which result from a flaw in the detail of the antisepsis. These may be illustrated by reverting to an instance witnessed in an operating-amphi-

<sup>\*</sup> Archiv f. Ophthalmologie, Bd. xxxviii., Abth. 2, p. 155.

<sup>†</sup> Transactions of the College of Physicians of Philadelphia, April, 1893.

theatre. The knife taken from the bath (carbolic acid) was handed to the operator by an assistant, who first wiped its blade with a towel that a moment before had been lying on the floor of the clinic-room. In another case an operator was about to make his section, when a colleague stepped into the room and was asked Thoughtlessly, he stepped to the patient's head and raised the carefully-sterilized lid with his uncleansed fingers. I need scarcely allude to the practice sometimes, though fortunately rarely, seen, of holding the knife, or rather the knife-handle, in the mouth. True, it is only the handle, but who would submit to the extraction of a cataract performed with a knife which had come so closely in contact with the mouth as such a procedure permits? These instances of thoughtlessness, carelessness, I was going to say malpractice, might be multiplied. It is unnecessary. Just as you attempt to make a perfect section, which, as has already been pointed out, is one of the two important therapeutic requisites in cataract extraction, so, also, you will not omit the smallest detail in the antiseptic procedures. Then if you are so unfortunate as to have a bad result, at least your conscience is clear, for you have done the best that modern science teaches.

Three points more and I have finished:

(1) Is there any test by which we may tell that an eye is ready for operation, provided there is any suspicious condition connected with it? Have the preparatory methods been sufficient? Nuel, discussing this point, lauds a practice which has been my own, and I am sure that of many surgeons in this city, for a long time,—namely, the application of a preparatory bandage. It is done in this wise: A day or two before the operation an ordinary double figure of 8 is applied to the eye over several squares of antiseptic lint laid next to the lids and held in place by a small quantity of cotton filling out the orbit. At the end of twenty-four hours the bandage is removed. If the eye is flushed, if the conjunctiva is watery, if the margin of the lid is slightly œdematous, and particularly if the gauze is stained with mucus or muco-pus, the eye is not ready for operation. This method has been elaborated by many surgeons; Haab, as you know, going so far as to close the lachrymal points by means of the actual cautery, thus shutting off the connection of the lachrymal apparatus with the conjunctiva. Other operators apply specially-devised dressings,-for example, Dimissas\* suggests a dressing composed

of a mixture of salol, boric acid, iodoform, and salicylate of bismuth. Upon this is applied antiseptic cotton dipped in a solution of sublimate (1 to 2000). The dressing must be removed in twenty-four hours. If the conjunctiva is dry and there is no vascular injection, a second dressing is applied, and the latter must not be removed until the moment of operation. If there is a secretion, then the dressing must be repeated each day until an entirely satisfactory condition is obtained. I believe, however, that the simpler method will answer an equally good purpose.

- (2) While not belonging strictly to the subject of antisepsis in cataract extractions, I cannot refrain from referring for a moment to irrigation of the anterior chamber. It is now universally conceded that if this be done, the bichloride of mercury must never be used. is well known that it is capable of originating permanent corneal opacities, and Mellinger † has shown that a solution of corrosive subfimate (1 to 10,000), if present for a short time in the anterior chamber, produces a parenchymatous opacity in the cornea, and if any of the solution remains in the anterior chamber a permanent opacity may result. Other fluids, as distilled water, weak acids, alcohol, and aqua chlorinata, produce opacities of varying degrees of density and permanence. On the other hand, a three-per-cent. solution of boric acid, or a half-per-cent. of sodium chloride, according to this experimenter, can be injected into the anterior chamber without bad results. Nuel, also, has shown that irrigation of the anterior chamber after cataract extraction with any substance, except physiological salt solution, is capable of injuring the endothelium, and I am inclined to agree with him that, in spite of certain statistics, the ranks of those who adopt this procedure are rapidly thinning.
- . (3) Finally, I wish to add a résumé of those procedures which I believe are safe and proper before and during cataract extraction:
- (a) Sterilization of the hands of the operator and assistants and of the skin of the region of operation in the manner already described.
- (b) Disinfection of all instruments with noncutting edges, or with edges not readily injured, by boiling in a two-per-cent. solution of carbonate of sodium, followed by transference of these instruments to a bath of absolute alcohol, in which they should remain for at least twenty minutes before the operation. When the operator is ready they should be removed from this fluid and their blades freed from the

alcohol, which is irritating, by dipping them for a moment in a vessel containing boiling water. Sterilization of the cataract-knife by dipping in boiling water, followed by immersion in alcohol, or by the method of Stroschein.

- (c) Preparation of the ciliary margins, with frequent washing with soap and water, followed by a thorough rubbing with sterile salt solution or, if preferred, a mild antiseptic fluid, and immediately before the operation flushing out thoroughly the conjunctival cul-de-sac with a boric-acid solution applied with some force, or a sterile physiological salt solution.
- (d) Removal of blood, etc., during the operation with bits of gauze sterilized in steam, and under no circumstances bringing in contact with the wound bichloride of mercury or other irritating germicide in strong solution.
- (e) Sterilization of alkaloidal solutions by boiling, followed by the addition of a chemical substance, such as a four-per-cent. solution of boric acid, or a 1 to 10,000 solution of bichloride of mercury, care being taken in the case of cocaine, after each application of it to the eye, to keep the lids closed, and thus prevent drying and wrinkling of the corneal epithelium.
- (f) Careful inspection and cleansing of the margins of the lids, conjunctiva, and lachrymal points, and the naso-pharynx. If the least suspicion obtains, the use of a preparatory bandage, no operation to be undertaken until this may be applied for twenty-four hours without evidence that undue secretion is created.
- (g) Due precaution at each subsequent dressing to exercise the same care with hands, dressings, and collyria that has been practised at the primary operation.

THE MEASURED EFFECTS OF CERTAIN
THERAPEUTIC AGENTS, AMONG WHICH
ESPECIALLY ARE LAVAGE, HCI, AND
INTRAGASTRIC ELECTRICITY

UPON THE SECRETORY AND MOTOR FUNCTIONS
OF THE STOMACH IN CASES OF CHRONIC
CATARRH (GLANDULAR GASTRITIS).

Read before the Section of Therapeutics, Pan-American Congress, at Washington, September, 1893.

BY D. D. STEWART, M.D., Lecturer on Clinical Medicine in the Jefferson Medical College.

In selecting a subject suitable for a paper for this Section of the Congress, on consideration none appeared more apt than that devoted to a rėsumė of the results obtained in several cases of chronic gastric catarrh by modern methods of treatment. Though a theme perhaps uninviting to many whose special work lies in other fields, and who, fortu-

nately for themselves, have also yet little personal need for knowledge as to the recent advances in the treatment of gastric affections, it is, nevertheless, a topic of high importance in view of the fact that the majority of cases of stomach disorder encountered are of the nature of chronic catarrh. These form the greater number of cases that the general practitioner is called upon to treat of so-called chronic indigestion, gastric and flatulent dyspepsia, and the like,—symptomatic terms, only significant in their convenient cover for professional ignorance and as assuagers of too inquisitive clientele inquiry.

Elsewhere,\* but recently, I reviewed in somewhat elaborate detail the general therapeutics of the various forms of gastritis. repetition, therefore, would be unnecessary. even though it here were an applied therapy and space permitted it. I have now rather considered less the general than the special treatment, and that by a few important remedies concerning the utility and modus operandi of which in certain directions there is still some debate. These are especially lavage, hydrochloric acid, and intragastric electricity. The effects of these have been particularly studied on the secretory and motor gastric In the application of these medicaments certain facts of importance in the therapy of chronic gastric catarrh are developed, especially as to the great utility of combined intragastric galvanism and faradism as a secretory stimulant after failure of other remedies. Conclusions reached in the three cases are in their most important particulars supported by similar observations in a number of other cases in which the partial or complete treatment here outlined was also pursued. Thus, deductions here cited, though drawn from limited data, may be, accepted to apply to a larger number of a similar class of cases.

CASE I.—Mrs. C. F., aged fifty-seven. For several years, prior to which digestion and general health have been good, there have been present dyspeptic symptoms, especially aggravated in the past two years, probably through overtaxing physical energy in the conduction of a tailoring business. She never had especially abused stomach. No alcoholic addiction. Her symptoms when first seen in May, 1892, were nausea, anorexia, and epigastric sensations of burning and weight succeeding all food, flatulency, constipation, coated tongue, occasional vomiting after eating, loss of weight (twenty pounds in two years), sallow

<sup>\* &</sup>quot;System of Therapeutics," edited by Hare, vol. ii.

skin, constant slight headache, very irregular, intermittent, weak heart, without enlargement, somewhat prominent temporals, but vessels nowhere noticeably fibroid. She was confined to the house and often to bed, sinking spells occurring at short intervals. outline of liver dulness was somewhat increased; stomach was slightly dilated; urine was normal in amount; no albumin; urea excretion normal. Under carefully-regulated. though nutritious, diet, the employment of laxatives, and the free use of HCl and of strychnine after meals, some subjective improvement occurred. The heart became absolutely regular under digitalis in full doses, but the latter much aggravated gastric symptoms, so could not be long continued. Strophanthus, increased to its maximum dose, formed but a poor substitute. Cactus grandiflorus, however. in doses of forty drops of the fluid extract, admirably replaced it; but though irregularity ceased without these as she became stronger, intermittency, in the shape of an imperfect systole every third to fourth pulsation, was constant when digitalis or cactus was withheld. Nitro-glycerin was taken for a time; this increasing headache, could not be continued.

Employment of the stomach-tube for diagnostic purposes and for lavage, previously objected to, was begun after she had been under observation five months, HCl after meals having been taken quite steadily. Examination of the stomach contents, first made then, showed: absent HCl; pepsin and lab-ferment present; albumoses in but small amount; no peptone; erythrodextrin present; no starch; digestion test negative without addition of HCl to filtrate; lactic acid in large amount; acid salts likewise excessive; much mucus in wash-water.

Daily lavage was begun October, 1892, the water in the first few weeks being medicated with sodium sulphate, bicarbonate, and chloride. Lavage has been continued to the present, with, lately, intermissions of a few days. HCl after meals was also continued quite regularly until intragastric electricity was begun in the ensuing January. A pancreatic preparation before meals was also taken occasionally. Three weeks after beginning lavage, other medication continuing as before, save that cannabis indica and strontium bromide were used for a time for certain local and general nervous symptoms, free HCl was detected in the stomach contents, with a diminution in the quantity of lactic acid and a heightening in the total acidity. From that time to the present, with a single exception,—three weeks after the examination noted above,—free HCl has invariably been found in all examinations. These have been made regularly at frequent intervals to the present. Intragastric electricity was applied daily from January 14 to April 19, in the manner detailed in another part of this paper.

Improvement was striking in all symptoms under lavage, cardiac irregularity ceasing entirely soon after it was begun. No cardiac medicaments have been prescribed since.\* Free HCl, which had been absent from the stomach notwithstanding a two months' course of this acid, appeared during the third week of lavage. It was not detected in any save a very low percentage until intragastric electricity had been used for three weeks. The increase was then so decided as to leave slight doubt as to its cause. At the expiration of nine weeks' daily employment of electricity, the percentage of free HCl was practically normal.

The wash-water was nearly always turbid with mucus in the early period of treatment by lavage; as improvement in general condition occurred, mucus was less and less present. little or none is noticed, save coincident with exacerbations of attacks of acute indigestion. Muscular strength has largely returned. general improvement in her condition since lavage and electricity were begun seems quite remarkable. Headache lessened under lavage, but did not disappear until the third week of the use of intragastric electricity. The bowels have been very regular, no laxatives being required. Occasionally, however, a calomel purge is given. Appetite, at first poor, soon became good. She is now constantly hungry, though getting four light meals daily.

The propulsive power of the stomach was at first much impaired, tested both by Ewald's method and by that which I prefer,—Leube's. In the early part of the treatment salol response was much delayed, and the larger part of a moderate dinner could be removed by lavage seven hours after its ingestion. Salicyluric response, when last tested, a few months ago, appeared in

<sup>\*</sup> Intermittence has returned on two occasions since, the last time early in June, an imperfect systole occurring with every fourth to tenth cardiac revolution. A return is coincident with temporary aggravation of the gastric symptoms. The cardiac tone has markedly improved. The first sound is normal; the second somewhat accentuated at apex. Pulse-tension is now always raised. This, not readily detectable by the finger, is shown by the sphygmograph. A rather highly nitrogenous dietary and comparatively little exercise is probably a factor in the maintenance of the high tension. There are no indications of renal degeneration.

three-quarters of an hour to an hour, and traces of food in the wash-water are now rarely, if ever, noted at the expiration of six hours after a moderate dinner.

The next case is especially of interest in that a study was made of the effects of various methods of treatment on gastric secretory activity, here almost entirely in abeyance until electricity was tried.

CASE II.—Mrs. M. M., aged thirty-five years. Symptoms of pronounced indigestion of four years' duration. Ailment existing in severe form when case was seen in January, 1893. There were then present discomfort after food, constant flatulence, with noisy, almost continuous eructations of bad-smelling gases and partially-digested, ill-tasting food. Discomfort after eating often amounted to pronounced distress, relieved only by vomiting. She usually vomited after eating, if any save the lightest food was taken. Asserts that she has lost, by actual measurement, in the four years in which she has ailed, between forty and fifty pounds in flesh. Loss in weight seemed evidently largely due to the extremely abstemious diet taken. The bowels were obstinately constipated, not moving without the use of harsh purgatives. Blood has never been vomited. There was no cachexia. Diffuse slight epigastric tenderness existed, but no tumor. The stomach was dilated, the lower level, when partly distended with a pint of water, reaching several inches below the level of the umbilicus.

Several examinations of the gastric contents were made when she first came under observation, before treatment was begun. These showed, at a time when gastric digestion should be at its height, total acidity, 25 to 30, due solely to organic acids and acid salts. HCl was absent from the gastric secretion. No response to Günzberg's test could be obtained until several c.c. of  $\frac{N}{10}$ HCl were added to 10 c.c. of gastric filtrate.\*

In addition to carefully-regulated diet and systematic daily stomach-washing, the early treatment consisted of, at first, for ten days, 5 grains of beta-naphthol and  $\frac{1}{20}$  grain of strychnine sulphate three times daily. No improvement. Then, for three weeks, dilute HCl in 15- to 20-drop doses, repeated three to

five times, at intervals of from ten to fifteen minutes after meals, the strychnine also being continued. No improvement. Symptoms as annoying as before. Five grains of an active preparation of pepsin were now added to the dose of acid; the strychnine was discontinued; some subjective improvement; vomiting ceased; eructations and epigastric sensations of weight succeeding meals were less; she ate better. All drugs now discontinued for four days. Stomach examination then made (March 7, 1803). One hour after Ewald's trial breakfast, tube in twenty-three and a half inches before outflow readily occurred; 120 c.c. imperfectly macerated roll removed.† Total acidity = 50; free HCl = 0.01 per cent.; lactic acid moderate, acid salts in excess.

The use of pepsin and acid were again resumed. After one week distinct improvement which had been felt under this combination was not maintained. All treatment save lavage and carefully-regulated diet then withdrawn.

March 20.—One hour after Ewald's trial meal 180 c.c. imperfectly-solved roll removed. Total acidity =25 = organic acids and acid salts. Absent HCl (no response to Günzberg's test until 2 c.c.  $\frac{N}{10}$ HCl added to 10 c.c. of filtrate). Digestion test made, but record of result lost.

Pepsin and acid in doses similar to those above recorded again prescribed. Improvement in symptoms of indigestion.

April 5.—Stomach examination made. Result practically similar to that immediately preceding. Pepsin now withdrawn and HCl alone prescribed, but in larger doses than before used. Symptoms of indigestion immediately recurred in aggravated form, such as nausea, eructations, and distress after eating. HCl now withdrawn, and 5 grains of pepsin, without acid, ordered, to be taken after meals for five days; food as before, moderate in amount, but largely albuminoid. No improvement. HCl and pepsin in combination re-begun. Symptoms ameliorated somewhat, but she could eat little because of distress produced by a moderate-sized meal.

April 16.—Pepsin and acid stopped; 6

<sup>\*</sup> Usually 2 c.c. to 10 c.c., or 20 c.c. to 100 c.c., of filtrate, showing absent bound HCl. I use this method as a very convenient gauge of the relative amount of *bound* HCl present in stomach examinations in which no response to free HCl is obtained by Günzberg's solution.

<sup>†</sup> The method employed for the removal of the stomach contents in these cases admits of a larger quantity being withdrawn than by the expression method of Ewald. The latter averages about 40 c.c., the former about double this. In this case 120 c.c. (with 270 c.c. (3ix) of fluid taken) indicates both diminished absorption and propulsion. The method employed for removal of the stomach contents in all these cases is that described in my paper, "A Résume of some Modern Methods of Diagnosis and Treatment of Diseases of the Stomach."

— Medical News, February 18, 1893.

grains each of papoid and beta-naphthol after meals ordered. Subjective improvement prompt, decided, and continuous, far more marked than on any previous treatment. After a few days symptoms of indigestion had almost entirely ceased. She ate better and slept well. Papoid continued for one month. Stomach examination, made at end of the second week and again on discontinuing the papoid, showed no change in secretory function, notwithstanding undoubted amelioration in subjective symptoms. All medication was now stopped, save the use of laxatives. The latter, which had been required from the first, were still necessary, lavage and the drugs used other than aperients not affecting the obstinate constipation, which was evidently due to marked atony of stomach and bowel. In a few days after discontinuing papoid, symptoms of indigestion recurred. On May 20, after an examination of the stomach contents showing same conditions as formerly, intragastric electricity was begun and continued daily for six weeks; no drugs, save for about three weeks of this period a nightly dose of aloin, were now taken. Amelioration in all symptoms was noticeable from the first. Improvement was steadily progressive, and at the expiration of the fourth week the bowels were acting naturally, and little or no discomfort was felt after meals. Appetite was good and she ate heartily. Contrary to my desire, she ceased coming for treatment at the end of six weeks, because of practical disappearance of symptoms. Stomach examination was not again made until she was especially summoned for this purpose two weeks after the final application of electricity. then, one hour after the trial meal, free HCl present (percentage not calculated); lactic acid and acid salts in traces; total acidity = 30; lab test prompt and decided; digestion test not made; amount removed 60 c.c., well solved. Lower part of stomach was twenty and a half inches from incisors, instead of twenty-four inches, as formerly.

Stomach examinations were repeated a few days subsequently,—on July 23, 25, 26, and 27. On the 23d Javorski's test for the relative amount of pepsin secreted was made; 200 c.c.  $\frac{N}{10}$ HCl\* were introduced into the empty, cleaned stomach, and the amount remaining at the expiration of a half-hour (80 c.c.) was removed. Acidity, 57 = 0.2 per cent. HCl. To a number of 10 c.c. tubes, containing small

disks of coagulated egg albumin of equal size, varying proportions of the filtrate from the 80 c.c. were added,  $\frac{N}{10}$ HCl being used as a diluent. In the undiluted filtrate egg disk was digested in less than four hours; diluted one-half, the disk dissolved in four and a half hours. With a number of other dilutions down to 0.6 c.c. of the filtrate the disks had disappeared in all the tubes when inspected nine hours after. placing them in incubator. These tests showed active pepsin secretion.

July 25.—Dinner at noon. Stomach washed at 5.30 P.M.; no trace of food in stomach. Ewald's trial meal now taken (for the first time in the afternoon); 45 c.c. well-solved roll removed; total acidity = 60; free HCl = 0.12 per cent. Lactic acid and acid salts present. Digestion test positive in three hours.

July 26.—Ewald's trial meal taken same time as on previous day, after washing the stomach; 50 c.c. well-solved roll removed; total acidity = 50; free HCl, 0.05 per cent. Digestive test, egg disk dissolved within four hours.

Impairment of the motor function of the stomach, permitting stagnation of ingesta, had been a prominent symptom. Seven hours after even a moderate meal the wash-water always contained much food. Improvement in the propulsive power of the stomach under electricity was manifest early. During the latter part of the period of treatment, the stomach. cleaned by aid of the tube each afternoon immediately prior to the electrical application, was found to be invariably emptied in from five to six hours after the noon dinner. The same was the case, with sustained improvement in other symptoms, when stomach-washing was practised on the three afternoons when the above-mentioned test meals were taken and Javorski's test tried.

CASE III.—Miss M. A., aged thirty years. For a number of years during autumn and winter she has had eczema of hands and face. Was consulted for this in November, 1891. Appropriate remedies entirely dissipated the rash, which, however, showed annoying tendency to During a bad outbreak of eczema in November, 1892, symptoms of indigestion, from which she had long suffered, became prominent. There were sensations of fulness and weight in the epigastrium; headache immediately after meals and continuing for several hours; flatulency, with eructations of sour, bitter fluid; constipation. They were quite unyielding to such remedies as nux vomica, laxatives, and HCl. For this reason, lavage, preceded by an examination of the stomach

<sup>\*</sup>N IOHCl=0.364 per cent. of absolute HCl.

contents, was begun. In the first examination, total acidity = 10 = lactic acid and acid salts; free HCl absent. HCl had been taken for three weeks prior to this and to the beginning of stomach-washing.

Very large quantities of thick mucus were always present in the wash-water at first. Recently, though the first few funnelfuls are never free from mucus, it is present now in much less quantity. For a time a mixture of sodium chloride and bicarbonate, as in the other cases, was used to favor the solution and expulsion of mucus. During the first two or three months of lavage, though tolerance to the tube was early established and no retching caused by its introduction, bile in considerable amount was a common constituent of the water removed. As her general condition improved this was less often present, and finally ceased to appear. HCl after meals has been employed for more or less lengthy periods since lavage was begun. At first it was taken steadily for three weeks, then discontinued for a short time, and subsequently rebegun and continued until April 22 last, when it was again stopped on starting with the intragastric application of electricity. Under lavage, subjective improvement was decided from the outset, and with it, HCl, which previously had not seemed of marked avail for its immediate effect, was now of decided benefit. Sensations of weight in the epigastrium, nausea, and other symptoms indicating imperfect gastric digestion, occurring immediately after food, were promptly relieved by it. These continuing after lavage was begun, were now readily controlled by this acid. The bowels also soon became regular without laxatives, which since have not been required.

Two weeks succeeding the first stomach examination free HCl was present in quantity (amount not estimated) to give a moderate response to Günzberg's solution and to Congo-It has not since been absent in any of the frequent examinations made. Under all forms of treatment, however, after improvement had begun, though the total acidity has averaged about 30, the percentage of free HCl has never exceeded 0.09. For a long time it averaged but 0.03. During the past six months the usual per cent. has been 0.07. Despite this low percentage, gastric symptoms, which had disappeared under the use of HCl and lavage, did not recur for some time after the discontinuance of the former. Intragastric electricity was used daily for two and one-third months, all treatment save lavage being then temporarily discontinued.

Atonic gastrectasis was present when the case

first came under observation. The lower level of the stomach extended somewhere below the umbilicus, and the tube for complete removal of the stomach contents required to be introduced twenty-four inches. Dilatation in this case was distinguished from gastroptosis by the employment of Einhorn's gastrodiaphane, which very prettily transilluminated the entire gastric cavity on distending the viscus with 2000 c.c. of water. The lower level is now somewhat above the umbilicus, and the stomach is readily completely emptied with the tube in twenty and a half inches. In this case, like the former, the gastric peristole was much affected, more than seven hours being required to dispose of a light dinner. The average period of gastric digestion is now five and a half to six hours, which improvement has been more especially manifest under intragastric electricity than under the use of HCl or stomach-washing alone.

The beneficial effects of intelligently-applied lavage upon the disordered gastric functions in diseases of the stomach are so well known that the results obtained in these cases of chronic catarrhal gastritis may be stated without other comment than that, though improvement was apparent from its employment in all, less occurred in Cases II. and III. than was anticipated from the nature of the ailment, so amenable in Case II. in many of its chief symptoms to electricity. In Case I. it is interesting to note that improvement was not manifest under a most careful regimen and suitable drugs, such as HCl, strychnine, and the like, until washing the stomach was systematically practised. Under the last, amendment was far more decided than it had previously been, and the appearance in the gastric secretion of free HCl was directly attributed to lavage. Its utility as a secretory stimulant, though more marked in this case when compared with the previous trial of HCl, was less noticeable than that obtained by the use of intragastric electricity. Lavage was without effect on the secretory function in Case II., HCl remaining absent after its longcontinued employment until electricity was used for some time.

Marked subjective improvement under lavage occurred in Case III., and free HCl, which was apparently absent from the stomach when washing was started, appeared in the gastric secretion in a few weeks of its steady employment. HCl and nux vomica, both often of some utility as stimulants of gastric secretion, had been previously taken without effect. These were continued for a time, but the benefit accruing,

from the mode of its appearance, was undoubtedly due chiefly to lavage. The improvement, however, in gastric secretion, as shown by the amount of increase in free HCl, was unfortunately of no marked degree under this or what proved in the others a more promising method of treatment.

The beneficial influence of lavage upon the motor function of the stomach, impaired in all, was quite decided in two, as is noted in the recital of the histories. In these two cases, under its use, the stomach emptied itself in a shorter time than had been customary, and the bowels became regular without laxatives. Lavage was without effect upon the gastric peristole in Case II., in which marked atony with gastrectasis existed. Obstinate constipation with delayed gastric propulsion continued, despite the daily employment of stomach-washing for a number of months and the coincident use of Subsequently, intragastric electricity regulated the peristole and re-established secretion.

The effects of the administration of HCl in these cases, as a secretory stimulant and as a digestant, is of no little interest. Recently\* I reviewed at some length the various indications for the employment of HCl in gastric ailments associated with lowered acidity. demonstrated that the use of this acid, contrary to the view held by many, may be of immediate utility acting as a digestant, though of no service in similar cases administered for a more remote effect,—that of re-establishing its own secretion.† In the first of the present cases, twenty minims to a drachm of the dilute acid were taken in divided doses after meals for about two and a half months, wholly without effect upon its own secretion, free HCl remaining absent from the stomach in all tests made at the time in which gastric digestion is normally at its height. In Case II., HCl was taken intermittently for a longer period in much larger quantity, both alone and combined with pepsin. Free HCl, however, remained persistently absent, except on a solitary occasion, when a fleeting response occurred to tests for it, until electricity was begun. In Case III. secretion of free HCl remained absent even after a three weeks' use of the acid in large doses, but was detected in traces three weeks subsequent to the beginning of daily lavage with antacids. It then gradually increased in amount under the morning stomach-washing and 1- to 2-drachm doses of dilute HCl after meals, until 0.07 to 0.09 per cent. was reached. Under no subsequent treatment has it been possible to increase this amount.

Cases I. and III. derived no immediate subjective benefit from the use of HCl, while its secretion as free acid was absent from the stomach. When, however, it began to appear in traces in the lifted contents after the test meal, immediate relief was always felt from symptoms of indigestion by its employment in full doses. In these two cases a series of experiments I demonstrated that the immediate amelioration in symptoms of indigestion occurring was in all likelihood due to the ability of the administered acid to perceptibly increase the very low percentage of free acid secreted to one at which peptonization could more rapidly Benefit was also not improbably due advance. to the stimulating power of HCl over pepsin formation,—to the transformation of inactive propepsin into the active enzyme; for apparently only thus could be explained the fact that after the use of this acid at the time of the trial meal, the digestion test with the filtrate from the lifted contents, which in previous examinations when acid had not been taken, was negative, now resulted positively.

In neither of these two cases was the administration of pepsin indicated. In Case II., however, absolutely no improvement resulted from the use of HCl alone, without pepsin. In this case, in which secretion of HCl was in abeyance throughout the period of medical treatment, except for a very brief time, response to tests for bound as well as free HCl being absent on all save one occasion, several trials were made of HCl as a remedy taken after meals, both without pepsin and again combined with it. The results were invariably that symptoms of indigestion were either unrelieved or aggravated by the acid when prescribed without pepsin and apparently always assuaged by the use of the combination. That the benefit could not be due to pepsin alone, as naturally would not be supposed, was shown by its subsequent trial without HCl being totally without effect.

<sup>\*</sup> See "A Consideration of some Modern Therapeutic Agents in the Treatment of Diseases of the Stomach."—THERAPEUTIC GAZETTE, February, 1893.

<sup>†</sup> This latter I barely touched upon, and the observations as to the former, though the results were conclusive, were only preliminary. In a paper in preparation—"On the Rational Employment of HCl in Certain Gastric Affections"—the whole subject will be fully considered from a practical experimental stand-point, and various modes of administering HCl, with their effect upon the secretory function and upon digestion, will be examined.

<sup>‡</sup> See "A Consideration of some Modern Therapeutic Agents in the Treatment of Diseases of the Stomach."—THERAPEUTIC GAZETTE, February, 1893.

The only reason apparent for the utility of the combination, in presence of the failure of acid alone, is that, as in this case \* secretion of HCl was suspended, and the percentage of total acidity, representing organic acids and acid salts, was usually low, pepsin formation, through the aid of acids, did not occur even after the administration of HCl; digestion was not, therefore, favored. For it is an established fact that in cases of mucous catarrh without complete atrophy of the tubules, in which HCl secretion is in abeyance, formation of active pepsin no longer occurs from its ever-present potential enzyme,-propepsin. The latter may exist in no small quantity in the mucous membrane, incapable of activity through lack of the presence of adequate amounts of HCl or another acid to aid in its transformation. these cases of total HCl anacidity, sufficient HCl cannot be administered medicinally after even a moderate meal to both saturate the organic bases, salts, and albuminoids of the food present and materially aid also in the formation of pepsin. But the employment of both pepsin and acid, provided considerable doses are taken, and the amount of food to be disposed of is not excessive, permits digestion to proceed—though imperfectly at best—by aid of the artificial gastric juice, the organic acids present also assisting in peptonization.

It must be stated that in Case II. papoid—a preparation from the Carica papaya plant-was also tried. It was taken continuously for a month, at first alone and subsequently combined with beta-naphthol, the latter being added to influence fermentation, originating constant annoying flatulence. Subjective improvement was more decided on papoid, when taken in doses of 5 grains and over, than with pepsin and acid. Relief from symptoms of indigestion were immediate, marked, and continuous during the period in which papoid was used. Subsequently, on its cessation, the patient immediately lapsed into her former condition, without any improvement having occurred in the secretory function of the stomach at the end of the thirty days' trial, as shown by the tests then made. The combination of papoid and naphthol seemed of somewhat more benefit than did the use of papoid alone, less flatulency occurring under the employment of the two. Naphthol had been previously tried when strychnine was also taken, in the early part of the treatment, but, without papoid, it was of no apparent utility.

Strychnine, in doses of  $\frac{1}{20}$  grain, was employed for a number of weeks in Cases I: and II., but apparently without any effect whatever. For a time, as well, infusion of quassia and calumba were also taken, with soda and acids, alternately.

The remedy of most signal benefit, both for immediate and permanent subjective and objective effect upon the symptoms and their underlying cause, was the intragastric application of electricity. In all the cases faradism and galvanism, and combined galvano-faradization, were employed as follows: The sessions in each case were daily † of from twelve to twenty minutes' duration. The stomach was first washed, if food or much mucus was supposed to be pres-A half to two-thirds of a pint of water were then taken, and the electrode swallowed. The intragastric electrode employed was the small-sized, so-called "deglutable" electrode 1 devised by Dr. Einhorn, of New York, and made for me by Mr. Otto Flemming, of this city. This is beyond doubt the most practicable of the various stomach electrodes suggested, and should always be selected in preference to all others for general use. When its perfect simplicity of application, without more than trifling annoyance to the patient unaccustomed to the tube, is more generally understood, and the benefit that may be derived from intragastric electricity in certain forms of diseases of the stomach is also known, this promising

<sup>\*</sup> Representing a class in which, with totally absent HCl from the gastric secretion, the use of HCl as a digestant must be almost or totally without effect.

<sup>†</sup> My experience with the medical use of electricity—a somewhat large one-has demonstrated conclusively to my mind that failure often attends its application to the amelioration of ailments which, in the nature of things, would be susceptible of relief, or perhaps cure, by the intelligent use of the battery, were sittings more frequent, such as once or twice daily, at least in the early part of treatment. It seems extraordinary that results can be expected in the treatment of chronic ailments other than perhaps the relief of a myalgia or the exercise of a paretic small muscle-group, from a few minutes' application of a current every two, three, or four days. Yet such is the technique of many who use electricity in medicine, and whose results, if results are obtained, accrue rather through psychical influence than from any actual direct effect of electricity.

<sup>†</sup> For a description of this electrode and mode of application, see my chapter on the treatment of chronic gastric catarrh ("System of Practical Therapeutics," edited by Hare, vol. ii. p. 925). Mr. Flemming now joins the electrode to a somewhat stout rubber cord insulating the rheophore. This enables it to be introduced into the stomach without more than one effort at deglutition, and does not necessitate the coincident ingestion of water to aid its passage into the stomach. See, also, Einhorn's interesting papers on the subject (Medical Record, May 9, 1891, January 30, February 6, 1892; New York Medical Journal, July 8, 1893).

method of treatment will probably come into more general use.

A felt pad formed the indifferent electrode. This was placed upon the epigastrium or another portion of the abdomen. The current was applied for some four to five minutes with the patient sitting, then for ten to fifteen minutes while in recumbency, alternately supine and upon the left side, to bring the current's influence, by aid of the water ingested, to all portions of the gastric parietes, and especially to those parts in which the chief secreting structure resides. When applications were made at the office, an equal portion of each electrical session was given to faradism and galvanisma few moments each to anode and cathodeand to galvano-faradization. The strength of faradic current employed was one that could be comfortably borne; the same was the case with the galvanic, which latter, however, was always accurately measured, and lay between ten and twenty milliampères. Case I. received the combined current daily for three weeks and then every third day, using faradism daily at home. Applications were continued daily for three months. They were then discontinued on subsidence of all symptoms and re-begun and continued for a week or so at intervals when electricity seemed indicated from revival of symptoms.

Case II. received the combined method daily during the whole course of six weeks' electrical treatment. A similar method was pursued with Case III., at first on alternate days and then every third to fourth day, she using faradism daily at home, the whole being continued for nine and a half weeks.

In Case I. the percentage of free HCl present before electricity was begun lay between o.o. and 0.05, the latter never being exceeded. From these figures, without other treatment than the intragastric application of electricity, -lavage, of course, being continued.—it rose in three weeks to o. r and in six weeks more to 0.14, about which figure it has since stood, except during periods in which, either from indiscretion in diet, inattention to bowels, or a lack of exercise in fresh air, the general health temporarily declined. The intragastric application of electricity apparently excited a markedly bracing effect upon the general condition, as well as upon the mere local disturbance in the stomach. A sensation of vigor was imparted by its use lasting several hours, and, under it, slight headaches, which had persisted for months, totally disappeared.

Case II., when electricity was begun, I had viewed as almost hopeless regarding improve-

ment to be expected in impaired gastric secretory or motor power, hitherto unyielding to lavage, HCl, strychnine, and other approved remedies. She, however, reacted to the battery in a manner surprising indeed. Totally without other medication, save for a time laxatives, aggravated symptoms of indigestion disappeared entirely and more completely than under any drug hitherto used. Electricity was discontinued after six weeks' daily use. Improvement had been maintained when seen a month after this,\* though no drugs had been taken. Several tests of the gastric secretion showed free HCl always present, and in very nearly normal amount. The bowels, which had become regular before electricity was stopped, continue so, and the stomach completely empties itself between five and six hours after a moderate dinner. All of which shows quite extraordinary improvement from the condition previously existing of HCl anacidity and of marked motor atony with stagnation of the ingesta in the stomach.

Case III. displayed no improvement in secretory power under electricity, the percentage of free acid—0.07 to 0.09, the figures reached on starting with the battery—being maintained but not exceeded. Improvement in the motor function was, however, more decided than under the use of lavage, strychnine, and HCl. After a few weeks' treatment by intragastric electricity, the stomach was invariably found empty in six hours after a mid-day dinner, when, formerly, at the expiration of from seven to eight hours, it still contained remnants of food. Epigastric heaviness and other symptoms occurring after meals, indicating imperfect gastric digestion, previously only relieved by the use of HCl, soon disappeared under the employment of intragastric electricity, no HCl being then required. As no visible improvement in secretory power occurred under electricity, the amelioration in symptoms of indigestion was evidently due to improvement in gastric motor tone, obviating undue retention of food in the stomach.

It is of interest to note that in these three cases no reaction for HCl could be obtained from the fluid removed from the stomach at the expiration of a half-hour, after ten minutes' application either of faradism alone or of gal-

<sup>\*</sup> The date of this writing—August, 1893. I am now experimenting with the use of HCl administered in large doses before meals, in this case and in Case III., hoping not only to maintain but to continue to improve secretory activity by this means. A report of the success obtained will be made in the paper preparing on the rational employment of HCl in diseases of the stomach.

vano-faradization, though in two of them a fair percentage of free HCl was present in the lifted contents after the trial meal at the time this test was made. This showed in these cases no immediate stimulating effect of electricity on the secretory function, and is contrary to results obtained by Einhorn.

In conclusion, a study of these cases, in which gastric catarrh was present in aggravated form, and in the two least promising of which the most decided improvement occurred, indicates that in the treatment of this ailment lavage is of service as a cleanser of the mucosa and as a stimulant to the most important of the gastric functions,—the secretory and motor; but that in all effects save the first, lavage is decidedly inferior as a remedy to the intragastric application of electricity; that HCl, administered even in full doses after meals, is of less permanent benefit as a stimulant to its own secretion than for its immediate use as a digestant, and that it may be of little utility in this capacity with total absence of this acid from the gastric secretion; then, however, benefit may occur from its use in large doses combined with pepsin. Finally, that of the various remedies employed in the treatment of gastric catarrh for their influence on secretion and motility, none are comparable with the intelligent daily use of intragastric faradism and galvanism.

2620 NORTH FIFTH STREET, PHILADELPHIA.

A CASE OF UTERINE MYOMA. HYSTER-ECTOMY ACCORDING TO A NEW METHOD.

A Paper read before the J. M. Da Costa Medical Society, September #2, 1893.

BY JOHN M. FISHER, M.D., Instructor in Gynzecology, and Chief of the Department of Diseases of Women in the Jefferson Medical College Hospital.

SEPTEMBER 3, or about three weeks ago, I was called to see Mrs. S., the wife of a physician, who gave the following history: Aged forty-four; married twelve years; three children; last two instrumental deliveries; made good recovery after each confinement; last child born six years ago; no miscarriages. Dates the beginning of present illness back three and a half years, when her menses became more profuse and more prolonged than was normal. She continued to grow worse, until within the past two years the periods recurred irregularly, the intervals covering a week or ten days, the flow continuing from seven days to two weeks, and occasionally longer, the hemor-

rhages at times being so excessive that the patient was frequently obliged to resort to the use of tampons and take to her bed for days in succession. Although under the constant care of physicians, who had tried every therapeutic resource (excepting electricity) for her relief, including curettement of the uterus sixteen months ago by a well-known obstetrician and gynæcologist of this city, the local as well as the constitutional condition became more and more marked.

She was very much emaciated, extremely anæmic and pale, the buccal and vaginal mucous membranes presenting a bloodless appearance. Anorexia, frequent nausea, insomnia, vertigo, palpitation, and præcordial distress were among the more pronounced symptoms.

A bimanual examination disclosed uniform enlargement of the body and supravaginal portion of the neck of the uterus to the size of a small cocoanut. The diseased organ was freely movable and, although firm, had a semi-elastic consistence. Myoma of the uterus was diagnosticated.

Having learned by experience that electricity in this particular class of cases is of no avail, either as a means to check hemorrhage or to arrest the advance of the disease, and bearing in mind the frequency with which malignancy attacks these growths, operation was proposed and readily accepted by the patient and her friends.

September 10 she was anæsthetized. After the vagina was thoroughly cleansed and firmly packed with gauze, the patient was placed in the Trendelenburg posture, and an abdominal incision made of sufficient length to deliver the tumor, which was free of adhesions. The peritoneum covering the uterus anteriorly was now incised transversely about one inch above its reflection on to the bladder, extending to a point on each side a little in advance of the uterine attachments of the anterior leaflets of the broad ligaments. The peritoneal covering below the incision with the superimposed bladder was pushed off the subjacent structures with the finger-nails until the cervico-vaginal junction was reached, as revealed by the presence of the gauze beneath. Two vertical incisions through the peritoneum from the extremities of the transverse cut and at right angles to same, extending along the anterior surface of the uterus and somewhat in advance of the broad ligaments, were next made, and the serous covering pushed off as before until the connective tissue between the folds of the ligaments in which were located the uterine and ovarian arteries was reached. A right-angled curved

ligature-carrier armed with stout catgut was next passed from below upward through the exposed connective tissue, entering at a point just above the vaginal vault, close to the cervix (thus avoiding constriction of the ureter), and taking in sufficient tissue in depth and thickness to insure ligation of the uterine artery, carefully avoiding, however, perforation of the posterior leaflet of the broad ligament. carrier was released and the ligature tied. Subperitoneal ligation of the ovarian artery was performed in a like manner. This being done on both sides, the peritoneum covering the posterior aspect of the diseased organ was incised on lines corresponding to those made on its anterior surface, and detachment of the same accomplished as before with the finger-nails, The supply-vessels cut off, the body and the supravaginal neck of the organ were freed from remaining attachments, without fear of provoking hemorrhage, and removed, the organ being severed with a scalpel immediately above the level of the cervico-vaginal junction. The mucous lining of the remaining portion of the cervix was excised by a circular cut and the raw edges touched with deliquesced carbolic acid. The opening in the cervix was closed by inverting its margins and stitching with a running suture of catgut. The gauze packing was removed from the vagina and the tissues allowed to retract to the sides and bottom of the pelvis. The opposing cut edges of peritoneum at the floor and of the leaflets of the broad ligaments on each side were now folded in (inverted) and the corresponding serous surfaces united by a Lembert continuous catgut suture. The ligatures surrounding the ovarian and uterine arteries having, as indicated, been placed between and below the cut edges of the broad ligaments, these, as well as the remaining portion of the cervix, were thus buried beneath the serous surface and therefore excluded from the peritoneal cavity, the site of the completed operation in the pelvis presenting a single line of suture of crescentic outline extending transversely across its floor. The abdomen was closed without drainage.

Save that the patient had considerable gastric disturbance for several days following the administration of the anæsthetic,—to which it was no doubt due,—the post-operative behavior of the case has been very satisfactory. The highest temperature (100.8° F.) was recorded on the seventh day. Since then she has been free from fever. The abdominal stitches were removed on the eighth day, firm union obtaining along the whole line of suture. She is free from pain, her bowels move daily,

and her general condition is all that could be desired at this date, twelve days after the operation.

Save in one particular (closure of the canal in the cervical stump), I believe the method of operation adopted in this case to be the nearest approach to the ideal that has yet been practised for the removal of uterine fibroids, and a more extensive experience will, I am confident, confirm the practicability and value of this most scientific of surgical procedures. The ligation of the cervix in mass, as practised by Schroeder, and dropping the same into the pelvic cavity, although warmly advocated, was soon superseded by the much safer, though apparently crude, method of fixing the pedicle in the lower portion of the abdominal wound and treating it extraperitoneally; and now this latter mode of procedure, held in such high favor by most operators of the present day, is likewise destined to a more limited practice, and in time may be abandoned altogether, giving way to the recently improved technique which insures the safety of the pedicle within the pelvis. This has already been demonstrated as practicable by a sufficient number of cases in the hands of Baer, of Philadelphia, as well as by others working on the same lines, to place their claims, in the main, beyond dispute. The plan of operation adopted in the case reported is simply a step in advance of that practised by Baer. He likewise ligates uterine and ovarian arteries, but in connection with other tissues, including peritoneum, en masse, thus leaving the ligatures with large raw and exposed stumps free in the peritoneal cavity, there to contract adhesions and give rise to whatever other mischief they may be capable of provoking. In our case all the ligatures, cervical stump, and raw cut edges were buried beneath the peritoneal lining, the line of suture itself consisting of opposed smooth serous surfaces held together by absorbable catgut. The anatomical conformation of the vagina was preserved and a floor to the peritoneal cavity secured, with a closed serous sac approaching the normal more closely than could be obtained by any other known method, which is in striking contrast to that of the weakened pelvic roof and the shortened and strictured vagina, the result of total extirpation.

Upon reflection, I have but one point to offer in criticism of the operative technique as practised in this case. While the patient has done extraordinarily well, nevertheless I consider invagination and closure of the cervix a fault and a possible source of trouble should it be adopted in subsequent operations. Uniting the opposing

peritoneal flaps and closing the cervix as indicated leaves a closed cavity the sides of which consist of raw oozing surfaces, and is therefore liable to become a nidus for accumulating fluids and infection. With the vagina antiseptically treated and packed with gauze, the portion of the cervix allowed to remain could be treated by excising, or dilating and cauterizing, its lining membrane, and then carrying a piece of iodoform gauze through the canal into the vagina; good drainage would thus be provided for this limited area of possible danger. Any excess of gauze in the vagina militating against the comfort of the patient could be removed, but sufficient should be allowed to remain to preserve an antiseptic condition of the parts for at least a few days, or until the cervical drain could be dispensed with.

In conclusion, I wish to state that the operative plan in the case reported was first suggested to me by Professor E. E. Montgomery, to whom I am indebted for assistance in carrying out its details.

October 6, 1893.—Patient left the hospital for her home to-day (two days less than four weeks after the operation). She is free from deleterious post-operative sequelæ, and is fast recovering from a state of chronic invalidism that characterized her general condition for more than three years.

1527 WALLACE STREET.

REPORT UPON CASES OF TUBERCULAR LARYNGITIS TREATED IN COLO-RADO SPRINGS.

BY S. EDWIN SOLLY, M.D.

DESIRE to report to you the general features and results of forty-five cases of laryngeal tuberculosis treated by me in Colorado Springs, which place stands at an altitude of six thousand feet.

I have gathered together two hundred and fifty cases of pulmonary tuberculosis, and the forty-five cases are all of these in which there was unmistakable evidence of laryngeal tuberculosis.

These two hundred and fifty cases are not all the cases of pulmonary or laryngeal tuberculosis treated by me during the eighteen years of practice in this region, but are all that I had opportunity to follow out and watch and obtain such knowledge of as would enable me to speak definitely of their progress and results, and in order to allow a reasonable time to

have elapsed before reporting, I have taken no cases that were seen for the first time in the past two years, and only those that were treated by me personally. As far as these conditions allowed, the cases were taken as they happened to come, and may be considered as fair samples of what the total of the cases would probably show if all the records had been complete, and this opinion as regards the whole two hundred and fifty cases is confirmed by their similarity in quality and results to the cases reported by other observers treated in this and similar altitudes. I could obtain no reports of laryngeal cases alone to compare them with, as to results; reports of cures of laryngeal tuberculosis after treatment are reported, but few that I know of that have been any length of time under observation. It will be observed that in the duration of the disease there is a relative likeness to reports of cases in low climates as given by others, and also a near resemblance in the percentage of laryngeal cases among the whole number of those with pulmonary tuberculosis, while the percentage in whom ulceration was found is close to that from Schroetter's autopsies, though smaller than Willigk's or Mackenzie's. It is therefore, I believe, fair to infer that the cases are of an average quality, and this is shown by their resemblance to the reports of pulmonary tuberculosis treated at an altitude made by other observers. While these results could not have been obtained without treatment, yet in many of the cases similar treatment previously used in low climates failed of any such results.

Frequency of Laryngeal Tuberculosis among Cases of Phthisis.

### Cases reported.

NT.

210.		er cent,
100	Mackenzie. Larynx involved in	3 <b>3.</b> 0
193	Louis. Larynx involved in	32.6
1226	Heinze. Larynx involved in	30.6
250	Solly. Larynx involved in	28.0
100	Mackenzie. Laryngeal ulceration found in	13.0
1317	Willigk autopsies. Laryngeal ulceration	_
	found in	13.8
723	Schroetter. Laryngeal ulceration found in	6.0
250	Solly. Laryngeal ulceration found in	8.o

Twenty-five of the laryngeal cases showed clear signs of tubercular infiltration, which had not, however, proceeded to ulceration at the time of the first examination, though some of them did subsequently, while twenty cases had ulceration as well as infiltration when first seen.

Average Duration.—The average duration of the non-ulcerated cases from the date of their first symptoms up to the present time or death was six years, while of seventeen of these cases who improved and are living the average duration is thirteen years, and of the eight who are worse or dead it was but three years and ten months.

The total average duration of the twenty cases with ulceration was three years and two months. Of five cases that improved and are living it was eight years and five months, while of the fatal and deteriorated cases it was two years. Of the deteriorated cases with and without ulceration, combined, the average duration was two years and seven months. This is somewhat longer than the two years' limit given by Bosworth.

Position of the Ulcers.—With regard to position of the ulcers, dividing them by the situation of the first or most marked ulcer, it was found upon the false chords in twenty per cent., on the commissure in thirty per cent., and upon the epiglottis in the same proportion; upon the arytenoids in forty-five per cent., and upon the true chords in fifty per cent.

State of the Lungs.—Of the non-ulcerated cases, forty per cent. were in the first stage, thirty-two per cent. in the second, and twenty-four per cent. in the third. Of those with ulceration, twenty per cent. were in the first stage, thirty per cent. in the second, and fifty per cent. in the third, thus showing a close relation between the condition of the lungs and throat.

Results.—These are placed under the following heads: cured, greatly improved, improved, and worse. These terms apply to the entire condition and not to the throat alone.

The cured are those from whom all signs of ill health have disappeared and who have remained well not less than two years. The greatly improved are those who are practically well, but yet show some local signs or trifling disability, or have not recovered long enough to be pronounced cured. The improved are those who, while they may have suffered and are still suffering from their battle with disease, yet show a tendency to recovery, but are still on uncertain ground. The worse include all the fatal cases and the few still living whose tendency is downward.

Non-Laryngeal.—Seventy-eight cured, thirtysix greatly improved, thirty improved, fiftyseven worse.

Laryngeal. — Non-ulcerated: nine cured, seven greatly improved, three improved, three died, two worse. Ulcerated: two cured, two greatly improved, one improved, ten died. Total laryngeal: eleven cured, nine greatly improved, four improved, sixteen died, two worse.

Grouping together the cured, greatly improved, and improved under the head of improved, we find of the whole two hundred and fifty cases of phthisis seventy-two per cent. improved; but of the forty-five laryngeal cases only forty-nine per cent. improved. The non-ulcerated cases, however, showed sixty-eight per cent. and the ulcerated only twenty-five per cent. improved.

Taking the condition of the throat, without regard to the ultimate fate of the patient, the results were much better, there being local permanent arrest of disease in sixty-four per cent., besides five cases which healed temporarily. Among the non-ulcerated alone, sixty-eight per cent. showed a return to normal appearance in the larynx; while among the ulcerated cases, fifty per cent. healed permanently and three cases in addition temporarily.

With regard to the position of the ulceration, the results were: commissure, 33.3 per cent. improved; true chords, thirty per cent.; epiglottis, seventeen per cent.; while of the arytenoids and false chords none improved.

To recapitulate, it may be said that of the whole number of cases—viz., two hundred and fifty—a little more than two out of three improved.

Of the forty-five who had laryngeal disease, one out of two improved.

Of the twenty-five cases in whom there was laryngeal tubercular infiltration without ulceration, a little more than two out of three improved, while of the twenty in whom there was laryngeal tubercular ulceration, only one in four improved; but of the two hundred and five cases without laryngeal disease, there was improvement in nearly three out of every four cases, the exact reverse of the laryngeal ulcerated cases.

This shows, as was to be expected, that the laryngeal complication reduces the chance of improvement, and when it has proceeded to ulceration, does so to the extent of three to one. But even then, according to the opinions expressed by laryngologists practising in low climates, these are far better results than have been obtained, and show, I believe, that similar beneficial, retarding, and often curative effects which have been demonstrated in pulmonary tuberculosis treated in Colorado and other high climates are exhibited in laryngeal tuberculosis. That the results are not quite as good, though relatively so, is of course to be expected, as in all of these cases-and I have never seen a laryngeal tuberculosis without an accompanying pulmonary tuberculosis—there was the double disease and therefore the double

burden to bear. Moreover, there is little doubt that the laryngeal complication in almost all, if not in all, indicates a tendency to a free dissemination of tubercle and generally an absence of any self-limiting features. There are undoubtedly some cases in which the laryngeal tuberculosis is derived from a local inoculation from the sputum from the tuberculous lung lodging on the abraded mucous membrane, but clinical observation leads me to believe that in the great majority of the cases the infection starts from within and not from without.

Taking the results upon the laryngeal disease alone, irrespective of the ultimate recovery or deterioration of the patient on account of the accompanying lung-disease, we find that in 64.2 per cent. there was arrest; and if we consider also the five in whom there was temporary healing, which broke down again under the strain of the last weeks of fatal pulmonary suppuration, we see that the percentage of improvement in the local laryngeal symptoms is not very far short of that of the simple pulmonary cases.

While I believe that, contrary to what was a common impression,—viz., that high climates are injurious per se to tubercular laryngitis,—they are positively beneficial, speaking as a generality, yet such results as I report could not be reached without, in the majority, especially in the ulcerated cases, careful local treatment. As Bosworth truly writes, after advocating topical measures, "In no ulcerative process, probably, are we able to detect in a less degree any reparatory effort on the part of nature than in tubercular ulceration, and yet instances of spontaneous cicatrization have been reported by Bouveret, Virchow, Jarvis, and others."

Treatment.—With regard to the nature of the treatment, it must vary according to the appearance of the parts from day to day, and all routine treatment is wrong. But in speaking of general principles, it may be said that the first essential is the toilet of the throat,—that is, the removal of mucus, pus, etc., and the washing of the membrane,—and this is in most cases best procured and with the pleasantest effects by a free spraying with Dobell's solution. The old injunctions were to use sedatives and avoid stimulants to a tubercular larynx. Now, in the majority of cases, if the choice lay only between sedation and stimulation, I would say stimulate; while there is, often continuously, and generally at the onset, hyperæmia and hyperæsthesia of some of the parts, yet the underlying condition is an anæmic one, the congestions are chronic, not acute, and the real good

of treatment almost invariably comes from stimulation, ranging from the mild stimulation of weak menthol and nitrate-of-silver solutions, etc., to the cauterization with lactic acid and the scraping of ulcerated surfaces with the Cocaine should of course be used to avoid the pain of treatment, while for pain at other times a spray of antipyrin will generally give a more prolonged relief. I should extend this paper beyond its proper limit were I to enter further into the details of treatment, but may mention that astringents, iodoform, etc., are often of service. I believe in using the cotton applicator, the powder-blower, and the spray as the case demands; also I must mention the valuable aid I derived from the Sass inhaler, particularly with the use of benzoin inhalations.

To conclude, it may be said that the foregoing facts would indicate that while tubercular laryngitis is always a grave complication at an altitude as elsewhere, and when advanced is almost invariably fatal, yet in the earlier and medium cases high altitudes, with appropriate treatment, afford relatively, though not actually, as good a chance of arrest or delay in laryngeal as in pulmonary tuberculosis.

### STOMACH-SYMPTOMS DUE TO ABSTI-NENCE FROM MORPHINE.

PROFESSOR HITZIG (Medizinisch-Chirurgisches Centralblatt, No. 24) thinks the great distress usually endured by persons when giving up morphine is due to the fact that the stomach is rendered hyperacid by the use of morphine. He gives the history of a young colleague who contracted the morphine habit while on duty at an insane asylum. The mode of treatment was to gradually lessen the quantity of morphine from day to day. The patient had a prolonged warm bath, and had the stomach emptied and then washed out with Carlsbad salt, and at night 1/2 drachm of trional was given. The observations in this case leave no definite conclusions, as all the usual symptoms of distress were lacking, but further observations may lead to more marked results. During the use of the morphine the hydrochloric acid diminished and almost disappeared, gradually returning when the use of morphine had ceased. Hitzig is inclined to think the morning washing of the stomach with Carlsbad salt was the important feature of the cure. He has given hydrochloric acid to chronic morphine patients, for he deemed it possible that the morphine appetite was caused by the artificially-produced hyperacidity.

### The Therapeutic Gazette

EDITED BY H. A. HARE, M.D., GENERAL THERAPEUTICS

With special departments under the charge of G. E. DE SCHWEINITZ, M.D., OPHTHALMIC AND AURAL THERAPEUTICS.

AND EDWARD MARTIN, M.D., SURGICAL AND GENITO-URINARY THERAPEUTICS.

#### GEO. S. DAVIS,

Medical Publisher, Box 470. DETROIT, MICH.

Philadelphia, 714 Filbert Street.

SUBSCRIPTION RATES FOR 1893.

THERAPEUTIC GAZETTE (postage included).....\$2.00 THERAPEUTIC GAZETTE with MEDICAL AGE..... 2.50 THERAPEUTIC GAZETTE with WESTERN MEDICAL

Reporter..... 2.50 THERAPEUTIC GAZETTE with BULLETIN OF PHAR-

MACY...... 2.50 THERAPEUTIC GAZETTE with AMERICAN LANCET 3.25

THERAPEUTIC GAZETTE with AGE and LANCET ... 4.00

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136 Gower Street, London. Price 208. Remittances may be made either by Postal Order or Stamps.

Price to Foreign Subscribers direct (postage included), \$2.50 (10 shillings). English postage-stamps received on remittances.

Editorial communications should be addressed 222 South Fifteenth Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively

Authors will receive reprints in pamphlet form, without charge, provided the request for them be written on the articles sent.

Business communications should be addressed to the Publishers.

### Leading Articles.

#### CALOMEL CONJUNCTIVITIS.

T is a matter of common observation that the introduction of calomel into the conjunctival cul-de-sac occasionally is followed by severe reaction and a sharp conjunctivitis. For many years it has been known that this inflammation, with a few exceptions presently to be detailed, occurs during the process of the elimination of iodide of potassium (which is being administered internally) through the lachrymal secretion, this drug under these circumstances combining with the calomel and forming a soluble salt, the irritating action of which becomes manifest in the manner stated.

The type of this conjunctivitis varies in different cases, but generally consists of swelling of the conjunctiva, sharp hyperæmia, profuse lachrymation, and sometimes, especially if the insufflation of calomel is continued (the cause of the trouble being unsuspected), of a positive sloughing of the membrane, or the formation of a gray deposit upon its surface. Indeed, if some of the earlier reports of this affection may be credited, not only do the ordinary phenomena of conjunctivitis present themselves, but there may be extensive swelling of the lids, reddening of the face and surrounding area, together with persistent blepharospasm.

Recently, Friedenwald and Crawford (American Journal of Ophthalmology, August, 1893) have reported three cases of this affection, utilizing them as the text for a very interesting and instructive article upon the mechanism of calomel conjunctivitis, and indirectly shedding light upon the manner in which calomel is absorbed into the system. Usually the symptoms appear within an hour after the conjunctiva has been dusted with the calomel, but they may arise earlier, in one instance, noted by the writer of this article, as early as twenty minutes after the calomel had come in contact with the conjunc-Experimentally, according to Friedenwald and Crawford, the phenomena arise in about the same length of time. It has been stated by Hirschberg that there is no danger of producing this affection unless the calomel insufflation has followed very shortly after the ingestion of the iodide of potassium. This view, as is pointed out by Friedenwald and his confrère, is not tenable, because one observer, using doses of .5 gramme, produced irritation of the conjunctiva with calomel twenty-four hours after the last portion of the iodide had been ingested, and in the cases of the authors from whom we have quoted, the doses of iodide were moderate and had not been taken just before the calomel was used. The same is true of the case to which we have made reference, as the last dose of iodide of potassium had been taken early in the morning and the calomel was dusted on the conjunctiva late in the afternoon.

For the most part this inflammation speedily disappears spontaneously as soon as there is cessation in the use of the calomel, and without leaving any serious results. Occasional exceptions to this rule occur. One, quoted in the article to which we have referred, did not recover until eleven days had elapsed, in spite of vigorous treatment, while symblepharon developed in another instance. Although its sharp limitation to that portion of the conjunctiva which comes in contact with the calomel, hence usually the lower retrotarsal fold, is characteristic of the affection, exceptions to this rule have been reported. So, also, instead of being monocular, occasionally both eyes are involved, and in bad cases the entire conjunctival cul-de-sac may be inflamed, and, in experimental instances, the corneæ may grow hazy and infiltrated. In the vast majority of the cases these untoward results have occurred when the ingestion of the iodide of potassium has been through the mouth. It should be remembered, however, that like phenomena may arise from the external use of the drug, as, for example, in one case where a solution of iodide of potassium was applied to an inflamed testicle, or when it is given hypodermically.

Friedenwald and Crawford quote the studies of Schlaefke and Fleischer in explanation of these phenomena as follows: Calomel, in the presence of animal fluids containing sodium chloride, and under the influence of the body temperature, is slowly converted into bichloride and free mercury. As the transformation into the bichloride is slow and small in quantity, it is believed that the clinical action of the drug on phlyctenulæ, etc., is due to its power in the nascent state. The following reaction is probably correct:  $2HgCl = HgCl_2 + Hg$ .

In the remainder of this interesting communication the absorption of calomel into the system, as well as the elimination, is further elucidated. For the details of the chemical data the original article must be consulted. conclusion of the whole matter is summed up as follows: 1. Part of the calomel is transformed into bichloride. 2. The potassium in the tears combines with this bichloride, forming the mercuric iodide, and, meeting the rest of the calomel, produces mercurous iodide, part of which, in turn, gives rise to mercuric iodide and metallic mercury, while the remainder combines with the excess of potassium iodide, forming a double salt with liberation of free mercury. 3. Mercuric iodide arising from the combination of the bichloride and potassium iodide, and also from the decomposition of mercurous iodide, combines with the potassium, forming a double iodide. 4. Both the above double iodides, dissolving in solutions of potassium iodide or of sodium chloride, act as caustics.

There is one other possible source of calomel conjunctivitis,—namely, from impurities in the drug. One of the best-known instances of this is a report of the serious effect of calomel upon the eye by Dr. Hotz, of Chicago, who observed an instance of severe inflammation when calomel was dusted into the conjunctival culde-sac of a patient who was taking no other medication than quinine. The calomel was examined, and a considerable quantity of free hydrochloric acid discovered. The chemist who made the examination, after reverting

to the fact that at the temperature of the body the chloride of sodium which is present in the tears can convert a little calomel into bichloride of mercury, stated, further, that this alteration is greatly favored by the presence of free hydrochloric acid; hence in this instance there was a more rapid formation of corrosive sublimate and, consequently, a greater caustic effect.

It is not improbable that a similar, although less severe, reaction would occur when the bromide of potassium was being administered internally, and, indeed, like effects under these circumstances have been reported by at least one observer.

### THE USE OF SALINES IN PERITONITIS.

HE use of salines in peritonitis in place of opium has become such a favorite method of treatment with a large number of practitioners, and has been so praised by many abdominal surgeons, that the limitations of their employment should be very distinctly understood. But by no means all cases of inflammation of the peritoneum indicate the use of saline purgatives, and in some instances there is little' doubt but that their administration does harm. Without meaning in this article to argue for or against the employment of opium, we believe that, in some instances at least, the saline treatment possesses disadvantages more grave than those which may follow the administration of opium. As we have pointed out on other occasions, the use of saline cathartics at any time in abdominal disease, unless the physician has every reason to believe that the alimentary canal is intact, may be followed by the extravasation of the intestinal contents into the peritoneal cavity through a perforation in some part of the gut, more particularly through the ulceration of the appendix. If it is remembered that there are those who assert that practically all cases of peritonitis in the male are due to trouble in the appendix, there is all the more reason for exercising care in the use of the saline treatment in peritoneal inflammation.

After operative procedures upon the abdominal contents, where peritoneal symptoms develop, the surgeon has every reason to believe, from the recent examination of the abdominal contents, that these organs are intact; but in any case prior to operation doubt must always exist.

We have been led to the reiteration of these important facts by a letter which has been addressed within the last few weeks to the editor of the *Boston Medical and Surgical Journal* by Dr. Maurice H. Richardson. His remarks upon this subject are so in accord with our own views, and emphasize so strongly the importance of the caution necessary, that we take the liberty of reprinting what he has said:

"I wish to say a word against the use of saline or other cathartics in the early stages of appendicitis, because you have recently published articles on appendicitis in which the use of cathartics, especially salines, has been advocated.

"The theoretical action of cathartics in peritonitis, as given by various men, consists in an absorption and removal by intestinal drainage of the toxic products of certain micro-organisms which, multiplying in or near the peritoneal cavity, endanger life. I do not object to carrying out this theory after the appendix has been securely tied, or after it is clear that there is no danger of rapid extravasation; but in the first forty-eight hours of appendicitis I look upon the administration of salines as extremely dangerous, and as a not infrequent cause of general peritonitis and death. The reasons for this lie in the pathological conditions that exist in a very considerable percentage of cases. If, in a given case, there is a perforation in an appendix of large lumen, salines, by liquefying the fæces and increasing peristalsis, will cause an immediate and almost invariably fatal extravasation. In such a pathological condition, which is not infrequent, the use of cathartics before removal and ligation of the appendix must be and is attended by most fatal consequences.

"There is the same objection to the use of salines in gunshot wounds of the intestines, in perforations of typhoid fever, or in perforating ulcers of the intestinal tract generally.

"In catarrhal appendicitis without perforation—the mildest of diseases—there is no hurry to produce catharsis. Should the perforation suddenly occur, by keeping the bowels quiet you avoid the danger of rapid extravasations and give the surgeon a chance to remove the appendix before a general peritonitis makes the outlook hopeless. In a localized peritonitis, if no surgical interference has been made, the recent adhesions may be ruptured by fresh extravasations forced along by a stimulated peristaltic vis a tergo, and a general peritonitis quickly develop.

"These objections to the administration of salines are based upon a very considerable experience. I may say that a majority of the fatal cases of appendicitis have been attended by extensive fæcal extravasations. I do not mean to assert that these extravasations have

been caused in every instance by the administration of saline cathartics, but I do mean to state most unequivocally that they have been so caused in many cases, and that, furthermore, the existing conditions of general spreading peritonitis, far from being curable by salines, are, in my opinion and experience, beyond relief even by the most radical surgical measures, except in very rare instances. Moreover, in these extraordinary cases where, in a fully-established peritonitis, recovery, with or without operation, takes place, I believe we shall find that only comparatively innocuous micro-organisms are present; on the other hand, the explanation of certain fulminating cases, even if apparently trivial at the outset, lies in the presence and rapid reproduction of germ colonies of great vitality and virulence. In either case I am convinced the action of saline cathartics has very little to do with the result, except in certain instances, for the reasons above given, to hasten the fatal end.

"If the appendix has been tied off, or if the peritoneal cavity has been walled off with gauze, or if there is a firmly-localized peritonitis, I do not object to cathartics, and I use the salines freely. I must say, however, that in a completely-established general peritonitis, from whatever cause, with distention, vomiting, and obstipation, in my experience, salines accomplish absolutely nothing.

"To produce 'intestinal drainage' after abdominal operations I think salines most excellent, and they have their use in the very beginning of a peritonitis in which there is no question of extravasation. I believe the future use of salines will be confined to these conditions."

### THE VALUE OF CREOSOTE IN GASTRIC FERMENTATION.

NREOSOTE has been so largely used within the last few years in the treatment of bronchial or general pulmonary disease that many of us have forgotten the valuable results to be obtained by its employment in the treatment of gastro-intestinal troubles associated with fermentation. As is well known, the name of the substance is derived from the fact that it was found to prevent decomposition of nitrogenous matter, and that it therefore acted as a distinct antiseptic. There are two classes of cases of indigestion or disorder in the alimentary canal in which creosote is of great value. Aside from those instances of persistent vomiting, where by its local action it often renders us great service, it is also useful in

those cases of fermentation or chronic indigestion in which there are formed large quantities of flatus some time after eating. Whether the distention is caused by the fermentation of starches or the decomposition of nitrogenous materials, a minim or two of creosote half an hour or so after eating, or immediately after eating, will often help such cases. Another instance in which creosote is of value is in a case of severe acute gastro-intestinal fermentation, which is often manifested, in the more severe cases, by an actual attack of cholera The administration of creosote in such an instance not only tends to prevent the vomiting, but to inhibit the production of poisonous products which are developing from the bad food that the patient has been unfortunate enough to take. Here, again, the dose of from 1 to 3 minims of creosote, well diluted, proves of value. In those instances in which the vomiting is too intense to permit the swallowing of much liquid, it may be administered in the dose of from ½ to 1 minim in a tablespoonful of water, milk, or brandy, a few drops of of this mixture being given at a time. Notwithstanding the laudatory statements which have been made as to the value of thymol, naphthaline, and other gastro-intestinal antiseptics, we believe that creosote is the best one which we can employ, and we doubt, if it is administered carefully, that it is as apt to produce disturbance of the digestion by irritation of the mucous membrane as some of the more highly praised and more expensive remedies. It is hardly necessary to add that it is important to use the beechwood creosote and not that derived from the mineral kingdom.

A NEW OPERATIVE PROCEDURE FOR RELIEF OF ENLARGEMENT OF THE PROSTATE GLAND.

IN a very comprehensive study of the present position of the surgery of the hypertrophied prostate, published in the Annals of Surgery, August, 1893, and abstracted by the British Medical Journal for September 9, 1893, J. WILLIAM WHITE proposes removal of the testicles as a possible means of causing involution of prostatic overgrowth.

With the idea of determining what effect this operation has upon the development of the prostate, White had a series of experiments on dogs conducted by Kirby, the results of which showed beyond all doubt that castration was promptly and invariably followed by atrophy

first of the glandular and then of the muscular elements of the prostate, and that there was consequently a coincident reduction in both bulk and weight.

Griffith, in a paper antedating White's, but which was not seen by the latter till his laboratory work was completed, obtained similar results, and cited post-mortem examinations which showed that castration in man exerted a powerful effect on the nutrition of the prostate.

He quotes Hunter, who observed that the prostate of the perfect bull was soft and bulky, while that of the castrated animal was hard and ligamentous. Griffith made an autopsy on two dogs and two cats which had been castrated years before, not for experimental purposes. In all of these animals the prostate had been transformed into a mass of fibrous connective tissue containing the remnants of gland tubules and a few atrophied muscle-fibres. The pig, bullock, sheep, and horse, after castration, exhibited similar changes in the prostate.

Grüber and Bilharz showed that castration in men is followed by similar changes in the prostate.

As to the possibility of employing castration as a therapeutic method in prostatic hypertrophy, White holds that the final answer to this question must be left to the patients. proposition to thus treat prostatic hypertrophy is so novel as to be startling, though on a careful review of the question it seems quite as reasonable as it was at one time, for instance, to suppose that ovariotomy would exert a marked influence on uterine fibroids. Indeed, White states that "if we can promise equivalent results there will be no lack of cases willing to submit to an operation almost painless, with low mortality, and accompanied by no such unpleasant conditions as follow fistulous tracts either suprapubic or perineal, even though the operation carries with it the certainty of sacrificing whatever sexual power has survived the excessive and often intolerable sufferings of such patients."

Mansell Moullin, in commenting upon this new proposition, freely accepts the teachings of experimental work and of post-mortem examinations upon the human as showing the relation between the testicle and prostate, but holds that what is now wanted is definite information as to the effect of castration upon the prostate when it is becoming abnormally large in old age.

Reginald Harrison makes an imperfect contribution to knowledge in this direction by reporting a case upon which he operated some years ago. This was never published until

White's paper brought the subject into prominence.

Harrison was consulted by a patient having a large prostate, for the cure of which the patient desired castration. This patient was familiar with Hunter's experiments and with cases in surgery which seemed to support the theory that castration might modify the prostatic overgrowth. Harrison refused to perform castration, but disconnected the testes and the prostate by subcutaneous division of the vasa deferentia immediately below the external abdominal ring. The patient experienced benefit from the operation and was living some years afterwards.

Finally, Griffith quotes Rocum as having performed bilateral castration in two cases for the purpose of favorably affecting an enlargement of the prostate. The first patient operated on was seventy-three years old. There was perceptible diminution in the size of the enlarged gland in three days. Instead of being compelled to micturate hourly, the patient was required to pass his water only three or four times during the day and twice during the night. Similar results were obtained in the second case. Rocum's communication was simply preliminary, and was probably in consequence of White's suggestion, since it appeared more than a month after his article.

As to whether or not castration will become a recognized therapeutic measure in the treatment of enlarged prostate, the answer can only come from clinical experience of cases. experience will undoubtedly be forthcoming. but to be conclusive must embrace more than two or three, or even more than twenty or thirty, cases. It is quite certain that the method will not be applicable to all cases. It is readily conceivable that if it is applied in but few cases, those least likely to be benefited by it might be chosen. It is quite possible that it will not be beneficial in any cases. It seems reasonable to suppose, however, that it will be found serviceable in certain forms of prostatic growth, to be determined by clinical experience, and that it may become a recognized method of treatment. If it affords us a means of curing or even relieving a small percentage of prostatics, it will be quickly accepted both by surgeons and patients, since, in marked contrast to prostatectomy, it is an operation easily performed and attended with practically no mortality.

Moreover, as has been clearly pointed out, the sacrifice of the testicles will be rarely required till the time of life is reached when these glands are functionless. Reports on Therapeutic Progress.

### SPECIFIC TREATMENT OF TYPHOID FEVER.

DR. EUG. FRAENKEL (Deutsche Medicinische Wochenschrift, October 12, 1893) treated fiftyseven cases of moderately severe typhoid fever with diluted cultures of the specific bacilli which cause this disease.

Into sterile thymus bouillon in test-tubes was placed, by means of a platinum wire hook three millimetres in diameter, a quantity of the culture of typhus bacilli from oblique glycerin agar, and the tubes kept for seventy-two hours at a temperature from 97° to 98° F. At the end of this time, after satisfying himself, by re-transmission on the agar, of the luxuriant development of the typhus bacilli in the thymus bouillon, the glass containing thymus-typhus bouillon was placed on a water-bath and heated to 145° F. After it had cooled another transmission on oblique agar attested its absolute sterility. Now the fluid was ready for use.

At first he made subcutaneous injections in the region of the iliac fossa, after first thoroughly washing the skin and spraying it with ether and disinfecting the syringe. As the injections, when made in the ilio-hypogastric region, occasioned pain and caused some reddening of the adjacent skin, the lateral gluteal region was chosen, and the injection made deep into the muscle. Here it proved nearly painless and there were no further signs of inflammation.

The dose and the frequency of the injection are important. The smallest quantity, even for children, of the prepared bouillon was ½ cubic centimetre. The cases were carefully diagnosed by three persons. Twelve of the fifty-seven treated were very ill, the others might be called average cases of moderate severity.

When the patients had been for one or two days under control, the first injection of .5 cubic centimetre was made in the gluteal region. There was usually no change following this. The next day the dose was doubled and the injection made on the other side. Following this the majority of the patients showed an increase in temperature, occasionally accompanied by a slight or severe chill. On the third day of treatment there was a fall of temperature, which after another twenty-four hours was still more marked, sometimes from one-half to a whole degree lower than the temperature at the beginning.

If the treatment was interrupted the temperature rose again. This shows the time for a

repetition of the injection with an increased dose. This time 2 cubic centimetres were injected and the same lowering in temperature occurred, reaching the lowest point after two days. The course of the temperature decides the further course. As soon as the temperature ceases to rise above normal the injections are interrupted, but otherwise they are continued at intervals of two days, and with an increase in the dose each time of 1 cubic centimetre.

The continued fever is almost without exception broken up; from the beginning the fever assumes an intermittent character, and entire absence of fever occurs in a relatively short time.

Of course the rapidity of cure varies with the patient; in general, those who have entered the hospital late are slowest in improving. The earlier relief goes hand-in-hand with a corresponding and often marked improvement in the general conditions, which is not inconsiderably aided by the profuse perspiration which accompanies the fall in temperature. Along with this there is a more or less rapid diuresis, and in not a few cases they pass from two thousand to three thousand cubic centimetres of urine.

The typhoid diarrhoea which most of the patients had ceased when the temperature fell. The patients look like individuals in full convalescence, even while roseola and a splenic swelling still exist.

In a few cases, indeed, after the beginning of defervescence the eruption of roseola occurred, just as the palpable spleen persists after the entire cessation of fever. But these symptoms disappear, and in the mean time the patients rejoice in excellent general health, an increase in weight sometimes occurring.

The patients can be better nourished, and on leaving bed, fourteen or sixteen days after the fever has ceased, are much stronger than when treated by the expectant plan.

This treatment does not prevent relapses or the usual complications. The relapses can be treated as at first. Fraenkel does not suppose that all cases can be cured by this method, but he feels that it produces a regularity and rapidity in the course of the disease which no former mode of treatment obtained.

## THE TREATMENT OF TYPHOID FEVER WITH DEAD CULTURES OF THE BACILLUS PYOCYANEUS.

PROFESSOR TH. RUMPF (Deutsche Medicinische Wochenschrift, October 12, 1893), incited by Dr. Fraenkel's experiments in the Hamburg

hospital, and remembering that varioloid and cow-pox render immune from kindred diseases, determined to learn whether a like therapeutic result could not be obtained by the introduction of dead micro-organisms which were not connected with the disease as a cause. The desire was to make use of such micro-organisms as would not, unless under very special circumstances, result in a severe illness.

The first preparation of which he made use was prepared from pure cultures of the streptococci, but as it produced no action to compare with that obtained by Dr. Fraenkel, recourse was had to dead cultures of the bacillus pyocyaneus. The use of these gave results differing only slightly from those obtained by Dr. Fraenkel.

As soon as the diagnosis of typhoid fever was certain, .5 gramme of the preparation, which was prepared just as Dr. Fraenkel did his, was injected, all the aseptic precautions being observed.

At first he injected into the forearm, but as this was followed by a painful redness and swelling, the gluteal muscles were chosen. The results only differ from those obtained by Dr. Fraenkel in being slightly less favorable. Professor Rumpf thinks that the question whether, after further experiments, typhoid fever shall be treated with dead cultures of the typhus bacilli or the pyocyaneus cultures, is less important than the fact that a human disease may be influenced by bacterial products which are quite different from those which produced it.

### THERAPEUTICS OF THE MASTOID.

After a careful account of the delicate portions of the middle ear and the great probability that an inflammation affecting one part will extend to all, Dr. Albert Bing (Centralblatt für die Gesammte Therapie, June, 1893) proceeds to answer the question as to why the inflammation of the mastoid is so varied in its course. He believes this difference is caused on the one hand by the anatomical structure of the mastoid, and on the other by the physical condition of the patient.

We distinguish between the diploetic mastoid, which consists of larger and smaller cells communicating with each other, and the pneumatic mastoid, which is composed of one large or numerous small vesicles partly separated from each other by thin walls of bone. When there is inflammation in the diploetic mastoid it occupies more space, being swollen, and but little room is left for free discharge; hence the thin bony partitions easily become involved in the in-

flammation,—osteitis. If this occurs in a patient not affected with any dyscrasia, and relatively strong, it is more likely that involution will occur, for the slight quantity of matter enclosed in the cells finds a large absorption surface and can readily be taken up and the swelling and inflammation be overcome.

But in a pneumatic mastoid the matter is collected in a mass and finds a relatively small surface for absorption, so that the absorption of the discharge can scarcely be hoped for, especially if the patient is feeble.

In the case of a strong individual, no matter how plain the symptoms, he would use expectant treatment, and only operate when severe pain and high fever made it necessary; for a feeble person he would hasten the operation.

7

ŀ

t

### CLINICAL EXPERIENCES WITH THE CATHARTIC ACID OF SENNA.

DR. KARL DEHIO, of Dorpat, (St. Petersburger Med. Wochenschrift, No. 27, 1893), refers to the fact that the active principles of rhubarb, frangula, and senna possess very close chemical relationship, or are perhaps identical. He has experimented clinically with the cathartic acid obtained from senna by Gentz, which he believes to be more constant in its composition and more likely to be pure than that previously obtained by Keebly.

Dehio administered it to twenty-one persons, giving adults 2½ grains and children § grain. This dose was somewhat too large. It did not fail in any case; the bowels were moved in the majority of cases in from eight to twelve hours, exceptionally earlier or later. In some cases it caused pain, but it was less likely to do this when it acted slowly. It appeared to act best in obstinate constipation.

#### TREATMENT OF DIABETES MELLITUS.

DR. Josef Gruber (Centralblatt für die Gesammte Therapie, xi., 1893) reports a case of diabetes mellitus, which he treated first with extract of myrtle, as recommended by Dr. Weil (Klinische Hydrotherapie, March). At first the patient appeared to gain under this, and there was a slight diminution in the amount of sugar found in the urine. However, as the improvement was not kept up, it evidently was caused chiefly by the more hygienic mode of life in the hospital. Tables are given showing the exact state of the urine from day to day.

When satisfied that no improvement could be looked for, Gruber tried piperazin for five weeks. The dose was 15 grains, dissolved in soda-water, during the course of each day. This gave better results, although the patient lost slightly in flesh. There was more lessening of the sugar secreted, and the patient's general condition was much more comfortable. Tables show the results obtained by this experiment also.

### THERAPEUTICS OF ABORTION.

Professor Schauta, of Vienna (Med.-Chirurg. Centralblatt, No. 26, 1893), does not advise active interference on the part of the physician in early abortions. The three symptoms of abortion are hemorrhage, pain, and changes in the cervix uteri. Pain usually precedes hemorrhage, and the cervical changes follow; but hemorrhage may come first, and then pain; and rarely contractions of the uterus continue some time unnoticed, because they are unaccompanied with pain. In these cases dilatation of the uterus has occurred first.

The first question to be answered before treatment is, Can the abortion be prevented or not? An abortion is preventable so long as the cervix is not patent and the hemorrhage has not reached a threatening degree. Schauta says he has seen many cases in which there was severe hemorrhage for a short time, but with recovery without abortion. He does nothing to check the bleeding, but watches the patient. If the pain and bleeding subside, and the os does not open, abortion has not occurred, and the patient is kept in bed for eight days after the last bleeding.

In unpreventable abortion,—that is to say, in cases in which the finger can enter the cervix, or when the os is contracted, but a severe hemorrhage has occurred which cannot be disregarded,—then the most dangerous symptom, the hemorrhage, must be controlled. To do this the abortion must be hastened, but not by emptying the womb with the finger or curette, because of the danger of leaving fragments of membrane behind. Instead, Schauta takes a strip of iodoform gauze about two yards long and three to four finger'sbreadth wide, and firmly packs the entire vault of the vagina, allowing the end to hang out of the vulva. He says two fingers of the other hand are a better guide in tamponing than a speculum.

If characteristic sacral pains occur, indicating that the embryo has been expelled, the tampon may be pulled out; in the absence of such symptoms, it should be removed in twenty-four hours, lest it should have become a source of septic infection. Then, if the abortion is

not yet complete, and bleeding still exists, it should be replaced, especially if the os is more dilated than the day before. If there is no bleeding and the os is not more dilated, he advises to wait, in the hope that the embryo has not yet separated and that abortion may be checked. If bleeding persists, tamponing may be safely kept up many days, provided that the tampon is renewed every twenty-four hours. In this way, as a rule, the intact ovum is obtained, whereas by more energetic methods it is crushed.

If, however, under tamponing the os is dilated so as to admit two fingers, but the ovum does not come away, then interfere actively. Introduce two fingers into the uterus, and with the other hand grasp the fundus and move it about over the two fingers, carefully and slowly separating the egg from the uterus. It should now be pressed out if possible. If it be too large for that, grasp it with forceps. The sac may rupture, but this is of no moment, since it is loose and comes out whole, not piecemeal. If bleeding still continues, the uterus itself can be tamponed in the same way as described in the case of the vagina.

In the difficult cases of incomplete abortion, in which part of the ovum or membranes remain in the uterus, one has to be guided by the size of the uterus. If it is large, the egg may be entire; if it is small, then only membranes remain. In the former case the treatment is as already described; in the latter case the os must, if necessary, be dilated with rubber or glass bougies and the uterus scraped, with the finger always introduced as a guide.

The interesting cases in which bleeding continues for weeks or months after an asserted abortion are of two kinds: either fragments of membrane remain, or there is an extrauterine pregnancy. In the latter case there is a history of pain, bleeding, and the discharge of fragments of decidua. The bleeding is apt to be intermittent. There is also a tumor beside the uterus, with a characteristic doughy, soft feel. Such cases require abdominal section.

Cases of habitual abortion can be caused by an hypertrophic endometritis. Scraping and an energetic treatment of the endometrium are required. A frequent cause is a change of position of the uterus, either retroversion or retroflexion, especially the former. The treatment is rectification of the malposition. Chronic heart- and kidney-diseases also act as causes. But the most frequent of all causes is syphilis, and generally paternal syphilis. Treatment must be by inunction of mercury (Schmiercur).

All other causes are extremely rare. If malformations exist,—as, for example, inability of the uterus to accommodate itself to the growth of the ovum,—then generally no conception occurs, or the woman gives birth prematurely to a dead child. But Schauta's article has been devoted to abortions occurring within twelve to sixteen weeks of conception.

# THE TREATMENT OF MALARIA WITH METHYLENE BLUE, AND ITS LOCAL APPLICATION IN DIPHTHERIA.

DR. A. KASEM-BECK (Centralblatt für Klinische Medicin, June 24, 1893) reports the use of methylene blue in thirty cases of malaria, when all other remedies failed or there was some reason why quinine could not be used.

The diagnosis was based on the physical condition of the patient; only in one case was the blood examined with the result of finding malaria parasites; in the other cases no such examination of the blood was made. The entirely characteristic course of the disease made the diagnosis clear even without such examination. The ages of patients ranged from two and a half years to forty years. Three of them suffered from febris intermittens larvata, indicated in one case by trigeminal neuralgia, in a second by severe headache recurring every day, and in the third by pains in the eye, which had been noted for five years. In the last case there occurred during the paroxysms changes in the sclera, cornea, and iris (iritis and keratitis parenchymotosa). In the course of 1892 the paroxysms of fever could still be successfully treated by quinine. In August of that year the malaria plasmodia were found in the blood. From November, 1802, on account of pain in the eyes, quinine could no longer be used. From March, 1893, the methylene blue was prescribed. One day later the pains in the eye ceased and it became perfectly normal. The paroxysms have been absent for a whole month. The methylene blue had just as favorable action on the two cases of latent intermittent fever: the use of it during two to three days was sufficient to cure the neuralgic pains.

In the remaining cases the intermittent fever was of various types. The duration varied from one year to three weeks, but was usually from three to six weeks, not counting short intervals free from paroxysms. In all these cases the fever paroxysms were quickly overcome by the use of the methylene blue. The dose was usually 1½ grains, with 3 grains pulv. nucis moschat.,

in capsules, four to five capsules daily, one every hour. Upon the cessation of the paroxysms the use of the methylene blue must be continued in smaller quantity, two capsules a day for from three to ten days.

There was only a recurrence of the malarial paroxysms in one case; it occurred after two months, and could not be cured by the methylene blue, but vanished under the use of Fowler's solution of arsenic in increasing doses.

Secondary symptoms were observed. Five times vomiting occurred after taking the methylene blue; three patients were women and two men. It should be noted that the vomiting did not occur after each dose; the first and second dose caused it, while the third and remaining ones caused neither vomiting nor nausea. Now and again the nausea and feeling of weakness caused dizziness. Most persons who took this remedy observed a frequent passage of urine, especially during the night, but the desire to urinate was not painful. In a few cases of strangury it could be accounted for by the fact that the patients had forgotten to take the muskat-nut powder at the same time, or that they had received large single doses,—4½ grains three times daily. In one case there was, indeed, a little blood found in the urine, but this disappeared three days after the discontinuance of the remedy. In spite of these symptoms, methylene blue is without dispute a good remedy for malaria, and may, as Kasem-Beck's observations show, be as certainly counted on as quinine. But large single doses must be avoided, and the whole treatment be conducted cautiously.

Kasem-Beck has also used the methylene blue to treat fourteen cases of diphtheria of the fauces, the soft palate, the pharynx, and in one case of the larynx, being in every instance well satisfied with the results of this treatment.

The methylene blue was used in a liquid (watery) solution (1 to 9), with which the diseased parts were saturated two or three times daily. In 1801, Beyer reported good results from the treating of fifty cases of pharyngeal diphtheria with a mixture of methylene blue In order to permit the and sugar powder. action of the sugar upon the diphtheritic process, Kasem-Beck ordered in each instance simply the watery solution of methylene blue. After moistening the diseased places with a plug of cotton, they were quickly saturated with the solution of methylene blue, which colored them dark blue; in order to let this have time to act, he never gives any gargle to follow it.

The temperature fell to normal in two to three days under such treatment, the œdema and the inflamed condition of the diseased places diminished from the first day, and the diphtheritic membrane began to disperse. The fact that the urine becomes blue or grav shows that some of the remedy is absorbed in the blood. Such a coloring is caused partly in that way and partly by the fact that some is swallowed during the painting. The methylene blue which finds its way into the blood is not without its influence upon the course of the diphtheria, especially when there is a general infection of the organism. So Kasem-Beck thinks that internal doses, such as are used for malaria, would also be valuable in such cases. He adds small doses of pilocarpine. The cases were all cured. Three times a paralysis of the pillars of the soft palate occurred; in one of these cases there was also a paretic condition of the lower extremities, especially in the thigh muscles. The latter complication disappeared, leaving no trace, in two and a half weeks.

#### SEROTHERAPY IN SMALL-POX.

B. Aucht (Archives Cliniques de Bordeaux, July, 1893) details two cases of small-pox treated with hypodermic injections of serum obtained from the blood of patients who had previously suffered from the disease. The serum employed in the first case was obtained from a man, fifty-one years of age, of previous good health, free from syphilis, and who was admitted to the hospital a month and a half after he had suffered from a discrete form of smallpox. Once entirely recovered he submitted to being bled. After proper disinfection of the skin, about fifty grammes of blood were drawn, and on the following day from fifteen to sixteen cubic centimetres of serum were obtained from this blood. Six cubic centimetres of this serum were injected into the patient. serum used in the second patient was obtained from a young man, twenty-five years of age, who had recovered from a slight discrete form of variola. From about one hundred grammes of blood drawn, from thirty-five to forty cubic centimetres of serum were obtained, of which eighteen cubic centimetres were injected into the patient. In the first case the injections were made on the tenth day of the eruptive period; on the second patient, at the beginning of the period of suppuration. The results were negative in both cases. The treatment produced no effect, favorable or unfavorable, on the evolution of the disease.

#### THE PHOSPHATES OF CALCIUM.

In a well-prepared article, P. CARLES (Journal de Médecine de Bordeaux) writes about the pharmacology and therapeutics of the calcium phosphates. The author concludes that no other except the tribasic phosphate of calcium ought to be employed in practical therapeutics. This phosphate is easily assimilated, and dissolved with the least difficulty by the juices of the stomach, notwithstanding the complexity of its chemical composition. This phosphate should always be prepared with calcined bone or, better still, with pulverized animal char-When it is precipitated by soda in two hundred times or less its weight of water, this phosphate becomes so tenuous and light that it can be easily suspended in syrup. In this form it will indefinitely keep its original qualities. When the phosphate of calcium is to be used under other forms, pharmacists must not lose sight of the fact that the medicament undergoes changes through the influence of heat. The phosphated pastes of commerce ought not to be employed except with great caution.

#### THE EMPLOYMENT OF THROAT DOUCHES.

In a preliminary note, REVILLET (Lyon Médical, July 23, 1803) calls attention to the advantages of douches of the throat, by means of a caoutchouc tube, in such diseases as chronic atonic pharyngitis and dry chronic atrophic pharyngitis. He prefers this to all other measures, believing the method to be of superior advantage in the treatment of the affections mentioned. Pharyngeal irrigations with antiseptic solutions, the author affirms, tone up the mucous membrane, enhance its circulation and vitality, and remove from the surface of the pharynx the liquid and scabby matters which cover it, and at the same time modify and even destroy the infectious properties of these secretions. A future detailed report of the method here referred to is promised by the author.

### THE TREATMENT OF TUBERCULOSIS IN CHILDREN.

In an exceedingly interesting article, CLEMENTE FERREIRA (Bull. Générale de Thérapeutique, July 30, 1893) gives his experience in the treatment of tuberculosis in children by various methods. With Koch's tuberculin his results were absolutely negative. The author afterwards tried the different antiseptic agents called by Germain Sée necrophytic. Ferreira employed successively creosote and guaiacol by the stomach and subcutaneously; aristol, iodo-

form, cantharidate of potassium, and chloride of zinc.

Treatment by Creosote.—I. By the Stomach.

—In this manner the medicament was given in the form of pills, or in drops with milk to very young children. The dose was progressive until half a gramme a day was administered. No gastro-intestinal or urinary troubles were produced. Amelioration in both the local and general symptoms was marked, further evidenced by improvement in the powers of nutrition, accompanied by a gradual increase in bodily weight. Many patients were cured in from seven months to one year, especially among those who were subjected to the treatment at the very beginning of the disease.

2. Hypodermically.—The remedy was used in solutions in sterilized oil, sometimes associated with iodoform. The injections were made with all antiseptic precautions. The doses, gradually increased, were proportionately larger than those employed by the stomach, and yet no local or general untoward effects were produced. The injections were not used in very young children, except in special cases. On the whole, however, the results obtained by this method, though good also, were in many respects inferior to those observed in cases subjected to treatment by the stomach.

Treatment by Guaiacol .-- 1. By the Stomach. -The effects of guaiacol by the stomach were equally as good as those resulting from the administration of creosote. The drug was well borne, even in comparatively large doses. Children from one to two years of age tolerated easily mixtures containing 2.5 and 3 grammes of guaiacol dissolved in alcohol and associated with julep. No gastro-intestinal troubles or other toxic phenomena were produced. The drug was generally better borne by children than by adults. A case of tubercular disease occurring in a grown person is reported, in which 3 to 4 grammes in the course of twenty-four hours caused such gastro-intestinal disturbances, like colic and diarrhœa, that it was found necessary to suspend the medicament.

2. Hypodermically.—Guaiacol dissolved in sterilized oil was injected subcutaneously, in doses of 25 centigrammes, these being gradually increased until 3, 3.5, and 4 grammes were administered at once, and only three times a week. The little patients would receive, therefore, from 48 to 50 grammes of guaiacol each month. Notwithstanding the antiseptic precautions taken, this method caused in many cases an inflammatory reaction, painful nodules, and even abscesses at

the point of injection. This mode of administration, therefore, offered no advantages, and the author believes that it ought to be resorted to only in exceptional cases.

Treatment by Iodoform.—This drug was usually given by the stomach, in emulsion with julep, and in doses of from 15 to 25 centigrammes in the twenty-four hours. It was generally well borne. Iodoform was, indeed, often found of great service, but its use had to be prolonged, since many times an intolerance for it shown by the little patients interrupted the treatment. Improvement under the drug was slow.

Treatment by Cantharidate of Potassium. -Liebreich's method was employed in three cases. For hypodermic injections, a solution, of which eight drops represented one-quarter of a milligramme of the drug, was used. jections of 3, 4, 5, 6, and 8 drops were made at a time, repeating the operation every six days. On the whole, the remedy did not produce bad after-effects. The kidneys tolerated the medicament remarkably well; no albumin was ever found in the urine, and there was no vesical tenesmus induced by the drug. local reaction or formation of nodules followed the injection of the agent, though the operation was somewhat painful. In one of the cases improvement of the pulmonary phenomena was noticed, but not so in the general nutrition of the patient. In the second case, the good effects were shown in the respiratory function especially. Appetite was also improved, accompanied with an increase of bodily weight. Similar results were seen in the third case, but the little patient did not stay long enough in the hospital to make fuller observations.

Treatment by Chloride of Zinc .- The method promulgated by Lannelongue was tried in two little patients. One of these was suffering from tuberculosis of the submaxillary glands. Improvement was obtained under the treatment, so much so that in a short time there occurred an almost total disappearance of the disease. This returned, however, in about a month, and was then combated with creosote by the stomach, the use of this drug producing markedly good results. The disease appeared for the third time, and injections of chloride of zinc Under this agent there rewere resumed. sulted once more a prompt and remarkable reduction of the glandular tumors. second case, one of coxo-tuberculosis, injections of zinc chloride from a solution of the strength of 1 in 20 were made, according to the indications pointed out by Lannelongue. The method here, however, failed completely, and besides, it gave rise to the production of a large abscess, it becoming absolutely necessary to remove the pus by aspiration. This patient was afterwards treated with creosote, with satisfactory results.

#### THE LOCAL USE OF GUAIACOL.

Apropos of an article by Bard on the antithermic properties of guaiacol locally applied, and of which an abstract was published in the GAZETTE for August last, M. LANNOIS (Lyon Médical, August 6, 1893) published a contribution on the same subject, mainly corroborative of Bard's observations. Lannois, having tried the method in three patients, concludes:

- 1. Guaiacol locally applied diminishes to a considerable extent the abnormal temperature or tuberculous patients.
- 2. The absorption of the drug occurs most probably in the skin, and not by the passage of the guaiacol vapors through the lungs.
- 3. The absorption of the medicament by the mucous membrane of the rectum gives rise to the same reduction of the temperature as when the drug is applied to the skin; this same action has been observed also in the case of creosote.

### THE TREATMENT OF CARDIAC DROPSIES BY THEOBROMINE.

G. SEE (Bull. de l'Académie de Médecine, August 7, 1863) publishes an elaborate article on the above subject. The author, after detailing seven cases of dropsy of cardiac origin, concludes as follows: 1. Theobromine, like caffeine, belongs to that group of substances called xanthines, which have a great affinity for uric acid. Theobromine is a dimethylxanthine; it is the inferior homologue of caffeine, which is a trimethylxanthine. withstanding their apparent analogy, their distinct physiological actions are determined by their methyl constitution. Both medicaments are diuretics, but the diuresis produced by theobromine is five times as abundant as that caused by caffeine. To produce such an effect the action is exercised on the secretory elements of the kidney, without any vaso-motor interference. 2. The action of theobromine in advanced cardiac dropsies manifests itself in an infallible manner. In the seven cases detailed, after other diuretics like digitalin, strophanthin, caffeine, etc., had failed, diuresis under theobromine was increased in from three to four days to two litres, and even six litres of urine; and pari passu with this increase in the amount of urine the dropsies decreased, since all the liquids were reabsorbed in an evident manner

proportionately to the polyuria produced. These effects were observed even when there was some albuminuria present; and there was not only an excess of the water eliminated, but also of the normal principles of the urine, among which may be mentioned urea. 3. The superiority of theobromine over other diuretics depends on the direct and absolutely inoffensive action of the drug upon the parenchyma of the kidneys. On the contrary, the other diuretics, such as digitalis, strophanthus, etc., act only by exciting the vessels and re-enforcing the heart. Caffeine, again, has the disadvantage of often producing cerebral excitement. Theobromine does not produce the least symptom of intoxication, although the nausea noticed sometimes does not in the least interfere with the genesis of the diuresis. 4. No matter what the cause of the cardiac dropsy, whether it be due to lesion of the aorta or of the mitral valve, or, again, to a degeneration of the heartmuscle, the effect of theobromine is the same. The medicament is prescribed to a patient in the horizontal posture, as follows: The first day, 2 grammes; the second day, 3 grammes in three pastilles of I gramme each, or in six pastilles of 1/2 gramme each; the third day, 4 grammes; the fourth day, 5 grammes. This mode of administration is followed by such an abundant diuresis and disappearance of the generalized œdema, as well as of the ascites, that tapping is dispensed with. When the dropsies are due to other than a cardiac cause, and are dependent on Bright's disease, then the effects of the drug are variable and doubtful. 5. The best mode of administering theobromine is in the form of pastilles or in capsules, since the drug is absolutely insoluble in water, alcohol, or ether. The substance which under the name of diuretin has been placed upon the market is nothing more than theobromine dissolved in salicylate of sodium, but the solubility of the combination can only be obtained by caustic soda in the strength of 4 to 100, and it is thus that diuretin becomes a dangerous substance. Theobromine is with difficulty absorbed probably in the intestines, but presents no inconveniences, and is in part eliminated by the urine, thus producing its curative action without causing bad aftereffects. Besides, the ingestion of a large quantity of liquid is not required, and here again it has an advantage over lactose, an excellent diuretic, but excellent proportionately to the quantity of sugar of milk, which requires to dissolve this one litre of water for fifty grammes of lactose, and does not act except in amounts of one hundred grammes,—that is, with two litres of

water. It may be said, then, that theobromine can be administered in a dry state, and must be accompanied by an ordinary but moderate diet. To maintain the effect produced, it is advised to prescribe, after a few days of repose, and during three days, ½ milligramme of digitalin, or 3 grammes of theobromine without any other adjuvant, unless it be the iodide of calcium, should there occur signs of oppression. With the observation of these rules, relapses of the disease can be prevented.

#### THE SERUM THERAPEUTICS OF CHOLERA.

DR. A. CHERNEL (Wiener Medizinische Blätter, No. 24, 1893) gives an interesting account of the experiments conducted by Pawlowski and Buchstaf to determine the value of the blood-serum of immune animals in the treatment of cholera.

They believe the complex symptoms of cholera to be caused by the absorption into the system of peptotoxine which is produced by the common bacilli; hence the efforts of therapeutics must be directed to find a substance which will neutralize this poison which is circulating in the blood. They think they have found this remedy in the blood-serum of animals rendered immune against cholera.

Their work was in three divisions: First, they occupied themselves in rendering the animals to be experimented upon immune; then they studied the properties of their blood-serum; and, thirdly, they tried to render another series of animals immune with this or to treat them if already infected.

The process of rendering immune is as follows: They inject first weak cultures and then stronger ones into the chosen animals. In this case twenty guinea-pigs were selected and as many rabbits. The inoculation was in part through intraperitoneal or subcutaneous injection and partly by application through the stomach by means of a stomach-tube. The results were always favorable: the animals proved perfectly immune against cholera virus.

Doubtless the same course could be followed in rendering human beings immune; but, on account of the danger of infection during the treatment, a less dangerous way has been sought. They think this has been found in the use of the serum of immune animals.

To obtain such blood-serum in sufficiently large quantities, dogs are rendered immune. In these animals the first injection causes diarrhoea, loss of appetite, and general loss of flesh; but the following ones, even when very active cultures are used, are harmless. The blood-serum

of dogs thus treated has very valuable therapeutic properties. In order to study its action, Pawlowski and Buchstaf tried it in a test-tube, mixing this serum with cholera cultures. The bacilli found no favorable medium for development in it, and showed at the end of twenty-four hours the Bujwid reaction no longer, a proof that the poisonous peptotoxine was lacking.

The experiments were made with forty-five individuals. After an injection of 6 minims, or even much less, of the blood-serum of highly-immune animals, they are rendered refractory to the disease. The test animals would certainly have been killed when the poison was injected; but having had the injections first, they remained living. It appeared from the experiments that .55 cubic centimetre of the remedial serum would be sufficient to render a human being immune to the disease. Of sixteen dogs experimented upon, seventy-five per cent. survived. Two dogs having shown marked cholera symptoms, one was treated with the serum and survived, while the other died.

According to Pawlowski and Buchstaf, the actions of the serum are explained, not only as a struggle between bacilli and organism, but also as a purely mechanical action, the precipitation of the peptotoxine in the circulating albumin.

The absolute harmlessness of the bloodserum was proved by personal experiments, which were followed by no pathological reaction.

### THE TREATMENT OF MYXŒDEMA BY THYROID-FEEDING: ITS ADVAN-TAGES AND RISKS.

PROFESSOR GRAINGER STEWART contributes to the July number of the London Practitioner an interesting lecture upon this subject, which deals, however, with that part of it already familiar to our readers. The point of particular interest which he emphasized was the danger of the cardiac depression produced by this thyroid treatment. After detailing a case which came under his notice, he goes on to emphasize the need of caution in this respect. He mentions the case of a gentleman whom he was treating along with an esteemed colleague with thyroid-feeding for Addison's disease, and in whose case a degree of general improvement had undoubtedly manifested itself. several occasions had fainting fits since he began the treatment. On one occasion, for example, he went out to have a game of golf, and fainted when he had given his first drive. But almost all who have had experience in the treatment

of cases have been impressed with this fact. Dr. George Murray, of Newcastle, to whose practical sagacity we are indebted for this brilliant addition to our therapeutic resources, has himself strenuously insisted upon this dan-He tells how two of his patients died from failure of the heart, the remedy having been administered to persons well advanced in years suffering from disease of arteries with cardiac degeneration. Dr. Lundie has also dwelt upon this risk, and urgently indicated the need of caution, while Dr. John Thomson has published the details of the fatal termination of a case well known to the profession from having been published in Dr. Byrom Bramwell's "Atlas of Clinical Medicine." After giving the details of the case and of its fatal termination, he finishes his paper in words which it is well to quote in extenso:

"While the state of the heart-muscle which was found in this case was amply sufficient to account for the fatal syncope, one can scarcely doubt that the thyroid treatment (or rather the imperfect application of it) may possibly have had some influence in hastening the end. The dose of the thyroid was certainly small (2½ thyroids in three weeks), but still it had already demonstrated the activity of its action by the very marked effect it had produced on the subcutaneous swelling.

"The lesson which the case teaches is, not that we should refuse to treat patients with unsound hearts, but that our precautions in such cases should be more stringent. The dose should be much smaller than in more robust cases. The patient should be confined to bed from the beginning of the treatment, and means should be taken to insure that directions as to complete rest and the recumbent position are more strictly carried out than they unfortunately were in the case of my patient."

This recommendation Stewart most cordially endorses, and in continuing the treatment of the present case he intends giving the remedy in small doses (10 to 20 grains), giving it more frequently, and shall strictly enjoin rest and avoidance of excitement during the whole time, and give an alcoholic or other stimulant along with the dose of thyroid and on the succeeding days.

He also draws attention to the treatment which was employed in emergency. It was strictly on the 'lines on which he is accustomed to insist in cases of sudden cardiac failure. It consisted in the use of general and of cardiac stimulants,—alcohol, ammonia, ether, strophanthus, and digitalis,—of counter-irritants and derivatives, application of mustard,

and dry-cupping; but in his opinion the life was saved by the mechanical relief afforded by the bloodletting. Had not the acting resident physician performed phlebotomy the condition would most likely have proved fatal. It is to be hoped that the success achieved in this instance will encourage others in similar cases of heart-failure to resort to this remedy, which is now so little employed, but which undoubtedly is able at times to serve most important ends.

To accentuate this point has been the writer's main object; along with this he also mentions certain other by-effects of the thyroid treatment which must be kept in view. Among these are the occurrence of local abscesses, which has led most practitioners to abandon the hypodermic administration of the remedy; the nausea, vomiting, and diarrhœa, which have often given trouble, as well as the extreme debility, the unconsciousness, the convulsions, which have been described by members of the profession.

### THE TREATMENT OF CHOREA BY LARGE DOSES OF QUININE.

It will be remembered that some months ago Dr. H. C. Wood published a paper in which he stated his belief that quinine would prove a valuable drug in the treatment of chorea, basing his opinion upon its physiological action. Following his advice, Dorland and Potts have used large doses of quinine in this disease. a result of their studies in seventeen cases, they find that in a number of cases almost immediate improvement took place, which continued for a time, after which relapses occurred. This occurrence, it seems, may be due to the fact that the quinine merely acts as a stimulant, and, like all stimulants, loses its effect in time, to be followed by depression. Therefore, so far as any conclusion can be drawn from such a limited number of cases, it would seem that the best treatment for chorea would be the administration of large doses of quinine to lessen the severity of the movements, adding at the same time measures to build up and strengthen the depressed nervous system. This seems to be shown in Case IV., where final cure only took place after the administration of cod-liver oil and iron, and also in Case X., where cod-liver oil also had to be administered after a time. Another fact worthy of emphasis is the large doses that the majority of the children could take without any evidence of cinchonism. Finally, they do not claim that quinine is an absolute cure for chorea, and that from this time no such thing as failure in the treatment

of such cases will be recorded. It should be borne in mind that after the chorea has been of long standing, and the loss of inhibitory power considerable or absolute, there must result organic changes in the motor cells of the cord, with the development of an atrophic condition. In such cases it is probable that failure will be the result of any form of medication, however rational. What is claimed is that in the acute form of chorea the results thus far obtained from the administration of quinine in large doses have been such as to warrant a further investigation as to the merits, immediate and ultimate, of this line of treatment.

### THE CONDITION OF THE URINE IN RE-LATION TO ANÆSTHESIA.

PORTER, of New York, writes in the July number of the *Post-Graduate* quite a long paper upon this subject, and concludes:

- 1. That ether and chloroform act upon the same principles, but with results developed by slightly different methods.
- 2. That both are capable of producing death at the time of the anæsthesia; chloroform more frequently than ether.
- 3. That ether causes as many, if not more, deaths than chloroform, but the fatal issue is delayed until the patient has recovered from the operating-table.
- 4. That by a careful study of the density of the urine and its causes we are in possession of exact information by which we can determine the precise nutritive condition of the system and are forewarned as to the possible outcome of the anæsthesia. It also enables us to judge which anæsthetic is best adapted to the individual case in question.
- 5. We are taught that neither ether nor chloroform should be administered until the glandular organs, in their necessarily damaged state, are put in the best possible condition to endure this extra strain. When this is a general rule many cases that now prove fatal will be saved.
- 6. It teaches that every public institution should have a paid physician who is competent to examine the urine and determine through it the status of the physiological economy before giving the anæsthetic. It should also be the duty of this same physician to administer the anæsthetic, for he alone knows best which anæsthetic to select with a given condition of the system, and is also better able to guide the patient safely through the anæsthesia than one who knows nothing of the constitution of the patient except from a second part.

7. While it is clear that death in some instances is directly due to the primary effects of the ether and chloroform, and in others to the secondary effects, it should not deter us from using them, but stimulate us to be more thoroughly master of their actions upon the system and to guard against their ill effects. When all this is accomplished, chloroform will probably hold the first place as an anæsthetic.

## THE VALUE OF THE COLD BATH IN THE FEVER OF PNEUMONIA OF CHILDREN.

In the Post-Graduate for July, 1893, FISCHER, of New York, has an article upon this subject, which he concludes by the assertion that it is always a good plan to administer a stimulant (good whiskey) before each bath, and this stimulation is not contraindicated though a child have delirium, the quantity depending on the condition of the heart, or, better, by watching the pulse, and also depending upon the age of the patient. The question as to whether stimulation is to be used hypodermically must be left to the judgment of the physician in each individual case.

To sum up the treatment he states the following:

- 1. That cold water is the best antipyretic used to-day.
- 2. That it is easily obtainable, and is therefore adapted to all classes of cases, both rich and poor.
- 3. The mode of application is so simple that it adapts itself to the hospital, and equally as well to private practice, and can be applied without any distinct training.
  - 4. Cautiously given, it stimulates.
- 5. Carelessly used and longer than required, it depresses and will produce subnormal temperature.
- 6. That rectal temperature should be taken, and the bath at once discontinued when the temperature falls to 101° F., as it will then continue to fall.
- 7. That a stimulant administered before the bath may be necessary, and should be given where there is a feeble heart.
- 8. That the temperature indicates when to commence and when, also, to discontinue the hydropathic treatment.
- 9. Unnecessary blanketing after the bath is injurious and will produce copious perspiration which weakens the patient.
- 10. The temperature of the room should always be between 68° and 72° F.

### THE PHARMACOLOGY OF THE NITRITES AND NITRATES.

Under this interesting title Professor Leech has delivered the Croonian lectures for 1893 before the Royal College of Physicians, and the following summary, which forms a leading article in the *Lancet* for July 22, 1893, will prove of interest to our readers:

Although the first two Croonian lectures, which dealt with the pharmacology of the nitrites and nitrates, contained the results of a large amount of labor and of close experimental research, the third and fourth lectures are, we venture to think, more likely to be of value to busy practitioners, since they deal mainly with therapeutic considerations. While laying due stress upon the various conditions in which the nitrites and nitrates may be of service, Professor Leech does not hesitate to indicate clearly their limitations, even though he thinks that they are too often discarded through excess of caution. In their favor he points to the small quantities necessary to influence the vascular system, to the relative absence of risk unless employed with suicidal intent, and to the evanescent action. referring to the broadness of the definition of angina pectoris adopted by Sir Richard Quain, he maintains that, according to clinical experience, this condition is always associated with a rise in tension due to temporarily-decreased caliber of either systemic or pulmonary vessels, and that the symptoms are the outcome of the heart proving unequal to the work it has to perform. The theory that the relief due to the administration of nitrites is the result of true analgesic action is not supported, the reduction of tension, as originally held by Dr. Lauder Brunton, being maintained as the true explanation. On account of their rapidity of action he prefers the nitrites of the fatty series, which can be employed by inhalation, but he considers that experience has shown that later attacks are of longer duration, and that although inhalations are beneficial in earlier attacks, they may frequently have to give place to remedies of more prolonged activity, such as nitroglycerin. Nitrite of amyl, as is well known, is not a stable compound, and it may on that account fail when it is given in solution, although a disappointing result may sometimes be due to the short duration of its period of action or to special insusceptibility of the individual. On the other hand, Professor Leech records many cases in which it has been found expedient to largely exceed the Pharmacopæial dose of the liquor trinitrini, and it is noteworthy that in his experience it is far safer to employ

somewhat large doses of nitro-glycerin than to resort to injections of morphine. Ethyl nitrate has scarcely been sufficiently employed in angina pectoris to warrant any very definite conclusions, but it appears to exert a more powerful and more persistent influence in reducing tension than that possessed by ethyl nitrite. Although the nitrates of propyl, isobutyl, and isoamyl are as effective as the nitrite of ethyl in lowering tension, they cause so much headache that they have not been employed medicinally. It must not be forgotten that the influence of nitrites and nitrates upon angina pectoris is palliative rather than curative, and that they should therefore be used concurrently with such remedies as iodide of potassium and arsenic.

Paroxysmal cardiac dyspnœa may be relieved by the action of the nitrites on the pulmonary system of vessels as well as on the systemic system, but the ordinary shortness of breath consequent on exertion, which is so frequently met with in simple valvular lesions of the heart, seems to be unaffected by them. On the other hand, Professor Leech is convinced that some good and no harm has resulted from the use of nitrites in cardiac failure or in syncope such as that occurring during the administration of chloroform. Of the value of this group in asthma and bronchitis there can be no doubt, but the rationale is not easy to explain. It is possible that asthma is not the result of simple bronchial spasm, but that there may also be, as has been suggested by Sir Andrew Clark, some hyperæmia or tumidity of the bronchial mucous membrane, and that the influence on the pulmonary vessels may also relieve the bronchial vessels. Whatever explanation is adopted, testimony is largely in favor of using nitrites in many of those cases which are ordinarily treated with ammonium carbonate and ether. In uræmic dyspnæa and in migraine the results are disappointing, but the converse holds good for the treatment of forms of headache associated with high tension. The value of the series in tetanus, strychnine-poisoning, and epilepsy is open to considerable doubt, notwithstanding the favorable statements which have previously been made. the treatment of acute Bright's disease there is also great lack of certainty of the efficacy of the nitrites, although diuresis has appeared to be hastened by the administration of nitroglycerin or sodium nitrite, headache and other discomforts have been relieved by them, and they certainly have the advantage of causing no ill effects. Similar difficulties attend the estimation of the results in cases of large white

kidney and in mixed forms of chronic nephritis, but in dyspnæa and cardiac failure of late stages of contracted kidney nitro-glycerin adds to comfort and perhaps tends to prolong life.

Among other practical points may be noted the remarks upon the official compounds. account of the decomposition of nitro-glycerin in presence of any salt, it is better to employ the tabellæ or else a simple dilution of the liquor trinitrini with distilled water. For subcutaneous injection, in the rare cases where inhalation of amyl nitrite fails, nitro-glycerin is better than sodium nitrite. The benefits of spiritus etheris nitrosi have depended upon the proper proportion of nitrite of ethyl, and lack of appreciation of this fact appears to be largely the result of the rapid decomposition which occurs on mixture with water; hence the valuable recommendation that the dilution should be effected only at the time when this drug is required. It is curious, however, to learn that this decomposition is retarded or prevented when solutions of acetate or citrate of ammonium are mixed with the spirit of nitrous ether. This combination has so long found favor with practitioners that it is comforting to know that their faith was grounded, even though unconsciously, upon sound scientific foundations.

In the concluding portions of the last lecture Professor Leech examined the pharmacology of certain groups allied to the nitrites, such as the nitro-group, the nitrosamines, the hyponitrites, and the oximes; but his remarks and experiments upon these points have far greater interest for the pharmacologist than for the bulk of the profession. Some of these groups are too nauseous for therapeutic work and others have exhibited marked toxic properties, and upon the whole we feel that they have been investigated rather with a view to throw light upon the method of action of older and simpler compounds than for the sake of perhaps adding to the list of new remedies. grounds, therefore, we refrain from summarizing the results obtained by Professor Leech, and content ourselves with noting that he has found that the nitro-compounds of the fatty seriesnitro-methane, nitro-ethane, etc.-lower tension for a long time, although not very markedly. From all that has been said it will be gathered that in these lectures Professor Leech has presented a very ample vindication of the value of pharmacological research. ments upon the behavior of the different groups upon muscles have afforded indications which have not only encouraged or discouraged therapeutic investigations, but have also given rise to very numerous practical observations upon the proper methods of prescribing and employing either the nitrites or their allied compounds.

#### THE TREATMENT OF PERICARDITIS.

In the Lancet for July 22, 1893, LEES publishes an interesting article upon this subject, in which, after speaking of the dilatation of the heart which he thinks occurs in pericarditis, and after considering the dyspnœa, he goes on to say that if these statements are true the proper treatment of pericarditis must be a matter of vital importance to the patient. It is clearly a condition which calls for prompt and energetic treatment, if only it can be satisfactorily determined of what nature that treatment should be. Fifty years ago there was neither doubt nor hesitation in the matter, and the treatment adopted was certainly not lacking in vigor. In his "Lectures on Diseases of the Heart," published in 1845, Dr. Latham describes his treatment of eighteen cases of pericarditis. He says, "Not a moment was lost in the application of remedies. They were venesection and cupping and leeches and blisters and opium and, from first to last, mercury." And he especially insists that it is necessary to push mercury to salivation. How many of these formidable measures are in use to-day? Venesection, cupping, and mercury have been absolutely banished from the treatment of pericarditis. Three or four leeches, or a single small blister, now represent the maximum therapeutic attack on the disease from without, while a little morphine alone remains as a representative of the active medication of former days, that is to say, we have given up the idea of curing pericarditis, and limit our efforts to keeping the patient at perfect rest, nursing him assiduously, and trying to ease his pain by morphine and by the soothing influence of warmth to the præcordium. We have, indeed, discovered that salicylates are curative of the rheumatic process on which the pericarditis usually depends, but it is taught by some physicians that this drug must be given up on the occurrence of pericarditis, lest it should cause cardiac depression. Thus it may be said that the treatment of this formidable complication of rheumatism is rather less than nothing, for the patient is actually deprived of the sole remedy which seems to have a specific influence over his rheumatism. Have we, then, no means of combating pericarditis as a local inflammation? I maintain that we have. the local, persistent application of cold. should be first tested by watching the therapeutic effect of persistent cold on a local inflammation in another part of the body,—on the neuritis of the sciatic nerve, otherwise called sciatica. If, in a case of this disease which is of not more than two or three weeks' duration, two ice-bags are placed over the course of the inflamed nerve, and are kept applied for two or three days, there is usually rapid and marked improvement, the pain and tenderness quickly diminishing. Encouraged by the result of this experiment, the effect of the application of an ice-bag over the tender region in the right groin in a mild case of perityphlitis should be tried next. The severe cases due to perforation of the appendix vermiformis are excluded by a concretion, for these are unsuitable for palliative treatment; they are only too apt to kill rapidly by general peritonitis, and require early operation. The writer has had six cases of this kind; five of them were saved by prompt interference; the first was not operated on and died in a few days. But if, in a case of perityphlitis in which there is a tense tender swelling in the appendix region, but in which the diaphragm still descends in deep inspirations and where there is no evidence of general peritonitis, an ice-bag is applied over the swollen appendix, the greatness of the relief which results within twenty-four hours is surprising. This has been noted many times. A recent observation in this impressed the author greatly. It was the case of a young man in whom severe symptoms of perityphlitis had already been present for ten days when first seen. There was marked distention of the abdomen, which was extremely tender over nearly its whole extent; the diaphragm was passive, and the expression of the face was such as to give the impression that he had not many hours to live. It was necessary to postpone operation for a short time, to obtain the consent of his relatives, and meanwhile an ice-bag was applied to the right iliac fossa. When visited again several hours later, with a view to immediate operation, astonishing improvement had taken place. He had lost all pain, the abdomen was much less tender, and the expression of his face was altogether different. The effect was so striking that for a short time there was hesitancy as to need for operation; but as it was practically certain that there was pus in the peritoneum, operation, was decided upon, and an incision let out a considerable quantity of pus from the peritoneal cavity. Very great relief followed, and the subsequent progress has been satisfactory. Here was a case of perityphlitis of the worst kind, in imminent danger of death, and yet the local application of ice was able to produce the most marked alleviation of the symptoms.

These two illustrations are enough to demonstrate the possibility of actively repressing visceral inflammations by the local use of ice, not to speak of the local effect in pneumonia, though there is positive proof of this, because here the local result is not so obvious: it requires careful daily watching of the physical signs. It is therefore probable that the application of ice will tend to check inflammation in the pericardium also; but a further question now arises. Is ice a safe application to the region of the heart? The heart inflamed with pericarditis is already much depressed; is there not a risk of depressing it still further by the use of ice, perhaps of bringing it altogether to a stand-still? If the heart of a recently-killed frog, which is still pulsating normally, be chilled by ice, it soon ceases to beat; if, then, the ice be removed and warmth be substituted, pulsation returns; this alternation can be repeated two or three times. In this experiment it is clear that the cold acts as a powerful cardiac depressant; but it does not necessarily follow that the application of ice over an inflamed pericardium will add to the cardiac depression. If it succeeds in checking the local inflammation it may even lessen the depression and actually become a tonic to the heart. Which of these two results will follow can only be determined by cautious employment of the ice-bag and careful observation of the result. The notes of seven cases treated in this manner, already published by the writer, give evidence that the ice-bag, when used with reasonable caution, is a safe application in pericarditis, that it is usually liked by the patient, that it tends to check the violence of the local inflammation and to hinder effusion, and that it may even help to cause absorption of effusion which is already present. It acts cito, tuto, et jucunde. Since the publication of these cases he has continued the use of the ice-bag in the treatment of pericarditis, and with very satisfactory results. In the subacute carditis of rheumatic children, often attended with some frictionsound and signs of cardiac dilatation, but with little pyrexia and few symptoms, each attack, however, leaving the heart more damaged than before, he finds that ice is of doubtful benefit and is apt to depress; but the acuter cases, even in children, derive great benefit from its use.

The question of the continuance or discontinuance of salicylates during an attack of pericarditis is of great interest. Some physicians of large clinical experience have advised the

omission of these drugs when pericarditis occurs, believing that they cause increased cardiac depression. Is this a fact or not? Lees has been carefully on the lookout for evidence of cardiac depression produced by salicylates. and has never been able to satisfy himself as to its occurrence. On two occasions he noticed a slight irregularity of the pulse apparently produced by salicylates, but he never observed any marked enfeeblement apparently caused by them. It is hardly likely that the cardiac depression produced by the pericarditis itself can by skilled observers have been been credited to the salicylates taken, and it is more probable the effect may have been brought about by some impurity of these drugs in days when an enormous demand for them suddenly arose and the methods of manufacture were not so perfect as at present. In a condition essentially rheumatic it seems a pity to give up the use of salicylates unless there is clear evidence of their hurtfulness. The author has been in the habit of continuing their employment in his cases of pericarditis treated with ice, and has been well satisfied with the result.

A little morphine subcutaneously injected is often of much service, and the application of a few leeches to the præcordium at the commencement of the pericarditis decidedly gives relief. He has only once had recourse to venesection; it was in the case of a young man with very severe pericarditis, in whom there was extreme cardiac dilatation. It was employed with a view of giving some relief to the right side of the heart, and it seemed to be quite successful, the patient recovering from what was certainly a very critical condition. An ice-bag also was kept over his heart for several days, and gave him so much comfort, that when it was removed he requested that it might be reapplied. On more than one occasion during his gradual improvement he experienced pain over the cardiac region, and at his own request the ice was again employed; on each occasion it gave relief. In many other cases in which the icebag has been used—in pericarditis, in pleurisy, in pneumonia, in perityphlitis, and in sciatica -patients ask for its reapplication, a fact which may be looked upon as a clear indication of the benefit which they were conscious of having received from it.

#### QUININE BLINDNESS.

In the *Medical News* of July 29, 1893, PISCHL contributes an article upon quinine blindness, in which he details a case in which he believes the amblyopia to have been due

entirely to quinine, although the man had been a drinker. He then goes over the literature of the subject, quoting Atkinson's wellknown paper and De Schweinitz's researches upon the results on the optic nerve of the administration of toxic doses of quinine.

### HEARING RESTORED BY LARGE DOSES OF OUININE.

In the *Medical News* of July 29, 1893, TRIPLETT records the case of a man, sixty-two years of age, very robust, always had very good health. About eight years ago he noticed that the hearing in his right ear was steadily growing less acute, until he finally became absolutely deaf in that ear, the hearing in the left ear remaining normal.

Shortly after the deafness developed both lenses of the eyes became cataractous, the left maturing before the right. Two years ago, in September, the left lens was extracted. All went well until he "caught cold" in the aphakic eye, when severe ophthalmitis set in. The pain was so severe that the opiate directed by his physician did not allay it. He told his physician to prescribe for him all the quinine he could stand. The quinine was put into large capsules, and he was directed to take one capsule every four hours, but instead of taking one, he took three capsules every four hours. Cinchonism followed, and a "burning sensation" in the extremities, especially the lower, was experienced. The ocular inflammation subsided, but with loss of vision. With the subsidence of the inflammation hearing returned, and has been normal ever since. There was no discharge from either ear, nor was there tinnitus aurium in either. No cause could be assigned for the deafness. The man had never been troubled with catarrh of the naso-pharynx.

In the following March the remaining cataractous lens was extracted. No complications arose, and the man now has good vision in the eye.

It seems that in this case quinine simply reversed its usual *modus operandi*. It is probable there is no practitioner who has not seen deafness of varying degrees, temporary or permanent, caused by large doses of quinine.

It is known that quinine produces congestion of the peripheral sense-organs, and it is probable that the auditory organs were in such a peculiar condition that congestion brought about this happy result.

It is also likely that, unnoticed, a slight dis-

charge may have escaped during the height of the congestion. The quantity of quinine taken is not known.

#### MASSAGE IN MUSCULAR RHEUMATISM, AND ITS VALUE IN THE DIAG-NOSIS OF MUSCULAR RHEU-MATISM IN NEURITIS.

Douglas Graham contributes to the American Journal of the Medical Sciences for August, 1803, an article upon this subject, in which he adduces evidence which to him is sufficient to show that massage is a valuable means of making a differential diagnosis between muscular rheumatism and neuritis. The patients who are suffering from muscular rheumatism rapidly recover under the employment of rubbing and the administration of suitable drugs, while those who are suffering from neuritis do not obtain so much benefit. At the same time he points out that in these cases of neuritis, particularly of the sciatic-nerve character, improvement also follows the employment of massage.

### TREATMENT OF TRUE CROUP BY THE "BROOKLYN METHOD."

In the Brooklyn Medical Journal for August, 1803. Dr. MADDREN has an article upon "The Treatment of True Croup" according to what he calls the "Brooklyn method." He states that the treatment of pseudo-membranous laryngitis by the sublimation of calomel was originated and used by his friend, Dr. Corbin, in 1874. The doctor's idea was that of the destruction of the products of inflammation in the windpipe by subliming a mercurial and compelling the patient to inhale it by loading the air to be respired with the sublimed material. The better and quicker to accomplish this, and to protect those in attendance from the harmful effects, he caused the patients to be covered by a temporary tent made of sheets, blankets, or other available articles. The black oxide of mercury was the material used in the first sublimation; afterwards the doctor substituted calomel, and had a special alcohol-lamp made for subliming it.

This treatment, while calling for care and thoroughness, does not, like tracheotomy or intubation, require special skill in the operator, and it has the advantage of being available for immediate and repeated application by those in attendance in the absence of the physician.

The sublimation of calomel should be begun early, as soon as a diagnosis of true croup can be made, or before, if there is a strong suspicion of a membrane forming in the windpipe, as evidenced by a peculiar, dry, barking cough, disturbance and difficulty of respiration, etc. There is much advantage in beginning treatment thus early, as the object should be not only to relieve dyspnœa, but to arrest the formation and extension of the pseudomembrane and to prevent or lessen systemic poisoning.

Preparatory to treatment by sublimation, a dose of calomel of two or more grains, according to age, administered early in the course of a laryngeal inflammation, has a very good effect, and I believe should be generally employed unless there are special contraindications.

The patient should be placed in a large, well-ventilated apartment, in which a temperature of about 80° F. can be maintained, and the air of the room kept well moistened by steam obtained by boiling water, or slaking lime, or from steam-pipes. Dr. Corbin adds carbolic acid to the water being evaporated. Perhaps still better is the combination recommended and used by Dr. J. Lewis Smith in diphtheria and scarlet fever. For several years Maddren has used it with satisfaction.

It consists of-

Acidi carbolici,
Ol. eucalypti, of each, 3i;
Spts. terebinth., 3viii.

"Add two tablespoonfuls to one quart of water, in a tin or zinc wash-basin or pan of broad surface, and maintain a constant state of ebullition or simmering in the room occupied by the patient." Observations in regard to the use of this vapor indicate it to be an efficient germicide.

The apparatus consists of a tent and an alcohol-lamp. For the tent, the child's crib or cot may be used. The uprights at the ends may be formed of bed-slats, broom-handles, or plastering-laths fastened to the head and foot or corners of the crib or cot, with a broomhandle, slat, or stout cord to form a ridge-The top of the tent should be a foot or more above the child's head, when sitting up The covering of the tent may be in the crib. two or more stout sheets or light blankets, applied so that they will cover both ends and overlap at the centre. This will permit the parent or nurse to hold the little patient's hand without uncovering or letting out the vapor, and to reassure and watch the child if necessary. Sometimes it may be desirable to have the patient remain in the vapor under the tent for some little

time after the sublimation has been finished; generally there is much relief of symptoms and distress, and occasionally the worn-out little one will fall asleep. The tent may be opened by folding back the sheets or covering from the centre, but if this be done too soon the moisture in the air of the apartment will quickly precipitate the particles of calomel suspended in the air of the tent.

To keep the air in the tent as pure as possible, it is desirable to consume but little time in the burning of each powder. This also avoids raising the temperature in the tent to too high a point and charging the air with an unnecessary amount of carbonic acid gas.

The alcohol-lamp may be such a one as Dr. Corbin has had constructed and has used for most of his cases. 'As the use of a previouslyused sublimating-lamp and outfit may be a possible means of conveying germs to others, it is safest to use a new outfit for each case. This may be easily and cheaply constructed by procuring a small alcohol cooking-lamp with tripod, fastening it with three or four tacks to half a crib-slat; the tin cover of a blackingbox or piece of sheet-iron (the thinner the better to favor rapid sublimation) to fasten to the top of the tripod and over the top of the lamp. There should be a concavity or slight indentation at the centre of the tin cover to prevent the calomel from scattering or rolling off when heated, and the edge of the sheet-tin or iron may be turned down, the better to restrain the flame of the lamp.

The quantity of calomel used in each sublimation should be from 30 to 60 grains; the sublimation to be completed in as short a time as possible. The intervals of treatment vary. When the breathing is specially labored and difficult, the burning of the calomel may be required, for a short period, half-hourly; but usually the treatment is repeated every two or three hours, increasing the intervals as the period of relief extends. In my experience the whole quantity of calomel used upon a case has been from one-half to several—and in one case that recovered eight—ounces.

As an auxiliary, turpeth mineral, in 1- or 2-grain doses, one, two, or three times in the twenty-four hours, especially when the character of the cough suggests a partial loosening of the pseudo-membrane, with the view of aiding or hastening its separation and expulsion.

When possible, oxygen should be available for immediate administration; it will often be of service, and may occasionally save a life.

Special attention should be given to sustaining the strength of the patient by nourishment

and stimulants, particularly following each sublimation.

Maddren believes, with Dr. Law, that "while mercurial fumigation will not take the place of surgical means, no physician is justified in performing intubation or tracheotomy in pseudo-membranous laryngitis until fumigation has been tried, nor, that failing, is he justified in allowing a patient to die without surgical attention."

After intubation or tracheotomy, when there is evidence or reason to suspect the formation of a false membrane below the tube, the sublimation of calomel should be employed or continued. Reports received state that this has been done in a number of cases. Dr. Landmann, of New York, makes this course a routine practice.

From the nearly 400 inquiries sent out, replies were received from 242 physicians, which are tabulated in full in the annexed table. Of these, 65 physicians belonging to Brooklyn, with 11 from New York City and elsewhere. have furnished reports of 505 cases of true croup treated by the sublimation of calomel. Of these, 275, or about 54.5 per cent., recovered; 85 of the 505 were tracheotomized or intubated after having been unsuccessfully treated by the sublimation method. Of these, 29 recovered. If we deduct these 29 recoveries after intubation or tracheotomy from the whole number of recoveries after sublimation (275), we have 48.7 per cent. of recoveries from the sublimation method alone. It is worthy of note that in these statistics the percentage of recoveries in those cases first treated by the sublimation method and then either intubated or tracheotomized is greater (34.1 per cent.) than those treated by either tracheotomy (24.2 per cent.) or intubation (30.5 per cent.) without the sublimation treatment.

### A RATIONAL OPERATION FOR ENTRO-PION FOLLOWING GRANULATIONS.

Masselon (Annales d' Oculistique, July, 1893) recommends the following operation: After applying a large palpebral forceps (Snellen or Knapp), make an incision in the skin extending the entire width of the eyelid and from two to three millimetres from the palpebral edge and parallel to it. Then dissect the skin and separate it from the underlying tissues below as far as the palpebral edge and above as far as the upper part of the tarsus. With forceps and scissors remove the orbicular fibres situated in front of the tarsus, so as to lay it entirely bare. Then remove the palpebral forceps

and seize the tarsus with the thumb and first finger of the left hand, slipping the forefinger under the eyelid. The alterations and deformities of the tarsus can thus be determined accu-Then proceed to remove or destroy all of the protuberant parts of the tarsus, so as to leave it just thick enough to permit perfect flexibility. This, the most important stage of the operation, is not without difficulty. The tarsus can be readily pared down with the blade of a bistoury, which is to be used flatwise and with a sawing motion. Curved scissors may be needed to detach the portions of the tarsus which were not perfectly severed. The thermocautery, although its blunt edge is less convenient, sometimes accomplishes the work of levelling the tarsus and reducing its thickness more promptly.

Three vertical sutures made on the tarsus alone must then be distributed over this tissue, as follows: Pass the needle through a narrow but solid layer of tarsus tissue, successively above and below the tarsus. This can be done correctly only by holding the forefinger of the left hand under the eyelid, so as to make sure that the needle enters to a certain depth, raising the internal surface of the tarsus. One silk thread is thus drawn through perpendicularly to the middle part of the tarsus and two on its sides. The sutures are then drawn firmly together and fastened with a double knot. Their tendency is to turn the tarsus in the opposite direction to its normal curvature. The ends of the sutures must not be cut near the knot, but brought together near the front and fastened with a strip of court-plaster above the eyebrow. These threads, being attached above, tend to bring the upper lip of the cutaneous wound against the tarsus; the former, of its own accord, rests against points where the sutures have been fastened and from where they are deflected in an upward direction. As to the lower edge of the wound, it naturally takes its place below the sutures, owing to the slight elevation of the small section of the skin adherent to the palpebral edge. In this way it is unnecessary to make any cutaneous suture whatever.

The bandage is to be worn forty-eight hours, at the end of which time the cutaneous wound will have closed. The sutures are then cut a slight distance from the knot, so as to allow a few millimetres of the thread to pass into the wound. These drop off of their own accord in a few days, or they must be detached if they fail to sever the tarsus tissue.

The marked advances made in therapeutics

in later years by the use of jequirity, brossage, scarification, and antiseptics in the treatment of trachoma, lead Masselon to hope that an operation for entropion, safe and lasting in its results, will tend to increase the number of cures, and to some extent reduce the number of unfortunate victims of this distressing malady.

# THE TREATMENT OF ULCERS AND ABSCESSES OF THE CORNEA BY CURETTING AND IRRIGATION.

WECKER (Annales d' Oculistique, July, 1893) for some time has treated ulcers and abscesses of the cornea by means of curetting and antiseptic irrigation. He claims the most astonishing results, the most important of which are: (1) the instant suppression of the pain and the photophobia; (2) clearing up of the surrounding parts, followed by a more rapid cure than is obtained by the use of various antiseptics, and particularly by the actual cautery; (3) restoration with a more transparent tissue than by any other treatment. The ulcers and abscesses are operated on with a small curette differing very little from the model of Critchett, except that it is one-third as wide and has sharp edges. He endeavors as much as possible to remove from the base and edges of the ulcer the sloughing material adherent to it, the operation being done under a spray of a four-per-cent. solution of boric acid.

### ON THE VALUE OF FORMIC ALDEHYDE AS AN OCULAR ANTISEPTIC.

M. VALUDE (Revue Générale d' Ophthalmologie, July, 1893) believes that in the estimation of the respective values of different antiseptics the mistake is made of trying to compare substances whose action on micro-organisms is absolutely different. Thus, sublimate, which as a microbicide is endowed with a power superior to any other known antiseptic [this statement is not correct.—ED.], must nevertheless yield to aniline substances under certain circumstances, when special tissues impregnated with pathogenic microbes are to be thoroughly This means, not that the aniline permeated. substances are more antiseptic than sublimate, but only that in the cases where diffusibility is required their action is superior.

With Dr. Dubief, Valude studied a substance possessed of a very interesting aseptic quality,—namely, formic aldehyde. Formic aldehyde appears in the form of a colorless liquid in the pure state, which, when dissolved in water,

with which it is very miscible, has only a very slightly empyreumatic odor. Formic aldehyde is very greedy of water, consequently very diffusible. Another advantage is that it does not coagulate albumin, nor is it poisonous, or only slightly so, since a certain quantity of it may be drunk with impunity. Other than this, it resists the action of light, even in a bottle insecurely corked.

The aseptic properties of this substance are exceedingly remarkable. They have been studied by Duclos with the very small dose of .016 milligramme to the litre. He prevented the development of microbes in meat-broth, and, with the vapor produced by allowing the open bottle to remain under a receiver, he succeeded in preventing a piece of meat from decaying through a period of several weeks. The actions of sublimate and formic aldehyde differ; advantages may be derived from the special properties of each. Sublimate is an immediate antiseptic, but one whose effect ceases as quickly, for it is well known that conjunctivas washed with sublimate betray micro-organisms on the next day. From this point of view, different results might be obtained from formic aldehyde, which insures prolonged sterilization. In the cases of patients destined for operation, Valude has performed disinfection with sublimate (1 to 2000) on one of the eyes, and on the other with formic aldehyde in the same dose. The conjunctivas washed with aldehyde were sterile fourteen times out of sixteen, while with sublimate the same fact was noted in only half the cases. As it is very difficult to determine, in such ocular infections as purulent conjunctivitis or post-operative infection, whether the treatment used acted by killing existing microbes or by preventing the development of new infections, he desired to experiment with formic aldehyde, which possesses the latter property to a high degree. In chronic conjunctivitis, where pus is constantly reproduced,pus, moreover, which resists every treatment,he has obtained the best results with repeated instillations of formic aldehyde, and with the same instillations he has also been able two or three times to arrest post-operative infections which were in a fair way to cause panophthalmitis. He considers it a valuable agent in such cases, and has used it with equal success in the ophthalmia of new-born infants.

There is one result which may be gained by this powerful aseptic, which is the prolonged sterilization of collyria, which do not precipitate with formic aldehyde as with sublimate; in fact, particles of atropine and eserine remained unchanged for more than a month. The simple sterilization of collyria is, therefore, according to the reporter, a solved question, and in order to assure it it is only necessary to use aldehyde in the dose of 1 to 2000. Finally, formic aldehyde has no influence upon the metals, and therefore is a good liquid for an instrumental bath. It does not irritate the eye, but causes only a passing smarting, which is increased by strong doses, but unimportant with solutions of 1 to 2000.

## CONCERNING OCULAR SYPHILIS AND ITS DIFFERENT METHODS OF TREATMENT.

M. CHIBRET (Revue Générale d'Ophthalmologie, July, 1893) thinks that the best general treatment for ocular syphilis consists in the hypodermic injections of soluble salts, particularly the cyanuret of mercury. The best method of local treatment varies according to the seat of the syphilis. Syphilis of the cornea and of the choroid are favorably affected by subconjunctival injections of soluble salts, whereas syphilis of the iris is insensible to this treatment. The combination of local and general treatment for corneal syphilis has produced more successful results than have hitherto been obtained by any other method. The unpleasant results by injections of soluble salts are, in the first place, a slight local pain, then diarrhoea, indicating acute poisoning, which is easily avoided and checked by the prudent administration of suitable remedies. The advantages of this method consist in the rapidity and intensity of the therapeutic action, as well as in the accuracy of the doses. The common unfavorable results from other medications are particularly symptoms of chronic poisoning, such as salivation, anæmia, and symptoms which readily result from intense or prolonged treatments. Iodide of potassium is of no specific value for syphilis. It facilitates elimination of mercury and is effective in combating poisoning. 'As an adjuvant to mercurial treatment, it diminishes its specific effects. it might possibly be expedient to combine or to alternate iodide with mercurial medications which incur the risk of chronic poisoning, it is certainly useless, in the belief of Chibret, to administer it conjointly with injections of soluble salts.

Trousseau believes that the treatment by inunction would always be the most successful if the rubbings were well done, which is rarely the case. Comparative results of treatments by subconjunctival injections and by careful rubbings are the same. The advantage is, therefore, with frictions, because they are more manageable. His own experience is that parenchymatous keratitis yields best to inunction, if it is carefully done from the beginning.

M. Panas, stating that he is the first in France to recommend the use of mercurial inunctions, believes it is his right to speak in their favor. He desires to say, however, that subcutaneous injections of mercurial salts (biniodide of mercury dissolved in sterilized oil) are greatly superior. He considers iodide of potassium preferable to mercury in the treatment of interstitial keratitis.

Parisotti protests against the strictures concerning the injections of calomel. He has long used them in his practice, always employing antiseptic precautions, because the substance itself is not antiseptic.

Sulzer agrees with Parisotti that local accidents may be avoided in the injections of calomel. The great danger of these injections consists in the fact that a possible mercurial intoxication of the most intense form might be maintained from the immovable deposit of mercury which has been placed in the organism.

Galezowski insists upon the fact that exploration of the ciliary region with the ophthalmoscope in interstitial keratitis demonstrates choroidal lesions which are the evident symptoms of syphilis, and recommends mercurial inunctions continued for two years.

Gillet de Grandmont prefers injections of soluble salts to inunctions.

Chibret; in closing, declares that the advantage of cyanuret of mercury over other mercurial salts consists in the fact that the former does not cause albumin to coagulate, and, when passing off, remains soluble in the tissues. Sublimate and biniodide, which coagulate albumin, are then transformed into soluble salts.

TREATMENT OF AFFECTIONS OF THE LACHRYMAL CANALS BY CONSERVA-TIVE AND ANTISEPTIC METHODS. A NEW PROCESS OF LACH-RYMOTOMY.

Bourgeois (Revue Générale d'Ophthalmologie, July, 1893) argues that the natural form of the lachrymal canal should be preserved. Removal by constriction, formerly so frequently practised, should be exceptional. The basis of treatment is injections, or spraying of antiseptic solutions, such as boro-borax and sublimate. These sprayings are made by means of a hollow probe passed through the inferior canaliculus. If the latter is contracted, especially

at the point of junction with the sac, there is occasion'to perform lachrymotomy. This operation may be compared to internal urethrotomy, and is accomplished with a small knife about half as long as the Weber knife. After the inferior canaliculus has been dilated by means of a conical sound, the knife is thrust inward, blade downward, as far as the bony wall of the sac, and then withdrawn in the same manner. Through the canaliculus thus enlarged, but preserving its tubular form, hollow probes are passed, by means of which the spraying is performed. If these sprayings are repeated several days in succession, the contraction does not return and the epiphora disappears. Recent dacryocystitis, it is said, is also rapidly cured in this way.

CONCERNING ANTISEPSIS OF THE CON-JUNCTIVAL SAC AND THE ANTI-BACTERIAL PROPERTIES OF TEARS,

AND

EXPERIMENTAL RESEARCHES IN ANTI-SEPSIS IN OPERATING FOR CATA-RACT, MADE AT THE OPH-THALMIC CLINIC IN ZURICH.

Under the above titles a lengthy abstract of two theses appears in the *Annales d' Oculistique*, July, 1893. The first is by J. Bernheim (Thèse de Zurich, 1893), and the second by Hildebrandt (Thèse de Fribourg-en-Brisgau, 1893). The following is Haltenhoff's review of these two brochures:

These works, inspired by Professor Haab, supplement each other, being based on the same methods of research,—namely, repeated inoculations on various cultivating mediums made with a platinum needle after its contact with the conjunctiva, or the palpebral edge, either before or after the various processes of ocular antisepsis, such as cleansing and washing with sublimate (1 to 5000 to 1 to 1000), painting with chlorine water, with nitrate of silver (1 to 2 to 100), with trichloride of iodine (1 to 1000 and 1 to 2000), dusting with powdered iodoform, and the application of a bichloride Microscopic examinations of the bandage. cultures were obtained, and inoculations on the corneæ of rabbits were made to verify the culture and establish its degree of virulence. Particular attention was given to the yellow staphylococcus, which is the most frequent cause of serious accidents following an operation.

Bernheim inoculated the eyes of eight blind

human subjects with pure culture of this coccus, and concludes from his researches that we have no means of freeing the conjunctiva from the micro-organisms always to be found there, even in its normal condition; but with our usual methods of disinfection we do, on the one hand, reduce the number of microbes, and, on the other, weaken the vitality of the remaining ones, at least for several hours. By preventing their increase until the wound made by the operation has closed, we ward off the greatest danger arising from infection.

The edges of the eyelids always contain more microbes than the conjunctival sac. Their migration to the conjunctiva is a constant source of infection for the latter. M. Bernheim demonstrated these facts by direct experiments upon one of his own eyes, the first time with the micrococcus prodigeosus and the second time with the sarcina aurantiaca. It is not possible to sterilize the palpebral edges even by repeated and careful disinfection, but the number of germs can always be diminished. fessor Haab has long since given up the idea of removing cataract or cortical remains by pressure with the palpebral edges. He considers this treatment very dangerous, both on account of the microbes existing on the surface of the edges of the lids and in the lashes, and on account of those which the pressure of the finger might force out of the openings of the

In forty experiments with tears taken from healthy or slightly-inflamed eyes, M. Bernheim has found that this liquid evidently has microbicidal properties, particularly for the staphylo-The number of these coccus pyogenes luteus. germs is diminished, without, however, their vitality being impaired. This antibacterian action does not depend on the rarity of the cellular elements contained in the tears, and must be similar to the analogous effects found in the case of serum and of the aqueous humor. Serum, however, has no effect on the yellow staphylococcus. On the other hand, some microbes are absolutely unaffected by the lachrymal liquid, as, for example, the micrococcus prodigeosus, which produces catarrhal conjunctivitis. If there are staphylococci in large numbers, tears have no appreciable effect. It is probable that in the normal state the continual renewal of the liquid, like a veritable lachrymal spray, plays an important part. On the other hand, those cocci hidden in the folds of inflamed mucous membrane-for example, in conjunctivitis and infectious keratitis—necessarily remain unaffected. A smooth and welldefined surgical cut, as in extraction, must be

less favorable to the increase of germs than an irregular one.

In order to study the effects on the microbes of the conjunctival sac and of various means of disinfection applied before and during the operation, M. Hildebrandt made bacteriological experiments on eleven patients before and at different moments after the extraction of cataract, in each case watching closely the process of healing. He found that recovery was most rapid and favorable in two cases in which the agar-agar tubes remained sterile, and in one case where inoculation produced a colony of non-pathogenic micrococci. One of these patients had first to be treated for chronic conjunctivitis. This case illustrated the disinfecting action of nitrate of silver used in the strength of two per cent. In four other cases where recovery was normal, and there had been germs, in part pathogenic, before the operation, energetic disinfection resulted in comparative sterilization, demonstrated by the results of inoculations. In these cases, in which recovery was delayed by more or less severe iritis, Hildebrandt established the presence of pathogenic staphylococci both before and after the opera-Disinfection in one of these cases had the effect of delaying the development of colonies. In another case, complicated by chronic conjunctivitis and dacryocystitis, there was only slight inflammation of the iris, in spite of the abundance of yellow staphylococci. proves how useful antiseptic measures are. The fact that iritis occurred after the operation in these three cases, where the number of pathogenic microbes contained in the conjunctival cul-de-sac was particularly great, argues in favor of a microbic origin for those attacks of iritis which are usually attributed to other causes, such as contusion of the iris by the nucleus, or by the intruments, or from swelling of cortical remains. We do not know whether iritis is caused directly by microbes which have been in the eye or by the poisonous products of microbes existing outside of the eye. In the last case, where yellow staphylococcus was present before and after the operation, and disinfection with sublimate (1 to 5000) seems to have had no effect whatever on the number of germs, the operation became complicated on the fourth day with purulent infiltration of the cornea, followed by slow irido-cyclitis and obliteration of the pupil. The conjunctiva and lachrymal ducts were normal. The other eye, in which the operation was successful, is one of those which had iritis. The author concludes that the progress of recovery is evidently influenced by the num-

Ľ

ŀ

ber of microbes contained in the conjunctival cul-de-sac, and that disinfection, especially with sublimate 1 to 1000, not only diminishes the number of pathogenic microbes, but reduces their vitality. As accidents from inflammation depend on these two elements, the usefulness of disinfection, which has been questioned by Steffan, is proved beyond a doubt by these experiments. The most rigorous disinfection, together with the most exact technique in the operation, and the least bruising of the tissues, increases the chances of rapid recovery and brings us nearer ideal asepsis, as yet unattainable in the eye.

### THE ACTION OF SCOPOLAMINE ON THE

L. Bellarminow (Vratch, No. 17, 1893; abstract in Revue Générale d'Ophthalmologie, July, 1883) has made some observations on the action of the new mydriatic recently proposed by Raehlmann (scopolamine). He draws the following conclusions: Scopolamine is indicated for the same cases as atropine, especially to determine anomalies of refraction and accommodation. Owing to its marked effect on accommodation, it permits of speedy and accurate determination; in addition, it considerably shortens the period of paralysis of accommodation and of mydriasis. Scopolamine is also preferable to atropine in cases of short attacks of inflammation of the cornea. In general, scopolamine has all the good effects of atropine, without its bad qualities. The author therefore thinks that scopolamine will soon replace atropine in the practice of ophthalmology.

### SUBCONJUNCTIVAL INJECTIONS OF SUBLIMATE.

GAGARINE (St. Petersburg Thesis, 1893; abstract in Revue Générale d'Ophthalmologie, July, 1893) relates his observations on the effect of subconjunctival injections of sublimate in the various diseases of the uveal tract and of the cornea. He used a solution of 1 to 1000, pure, or with cocaine. His results are as follows: In gummatous iritis (eight cases) they are brilliant; after the second or third injection (on the sixth or eighth day) the iritis disappeared or, at least, improved considerably, even in cases where the general treatment was not used; in cases of plastic or purulent iritis (nine cases) the effect of injections of sublimate was likewise excellent: a cure was effected in from six to eight days; in cases of irido-choroiditis after recurrent fever

(six cases) the influence of the injections was still more marked; in cases of irido-choroiditis (irido-cyclitis) of another origin, especially traumatic (nine cases), injections also proved very useful, acting very quickly, two or three usually being sufficient. In cases of diffuse parenchymatous keratitis (twenty cases) the injections had very little effect, or even none at all; but in cases of ulcers of the cornea with hypopyon, injections of sublimate had very favorable effects, acting even more promptly than in cases of iritis: after the first injection there was a marked improvement. In cases of episcleritis (three cases) the injections had practically no effect; and in cases of degenerated glaucoma (two cases) the effect was favorable: the pain diminished.

### OPERATIVE TREATMENT OF TYMPANIC VERTIGO.

In the Medical News of September 30 DR. CHAS. H. BURNETT attacks the view that "Ménière's disease," or, as it is now generally called, the Ménière complex of symptoms, is due to internal ear disease, generally extravasation or exudation in the semicircular canals, and recites a further series of cases, making ten in all, in which intratympanic operation has given re-Fixing his attention upon the stapes as the real key to the situation, he now is less inclined to remove the larger ossicles if the pressure upon the inmost ossicle can be otherwise relieved. He removes only so much of the membrane as gives access to the incudo-stapedial articulation, extracts the incus, or only its long process after disarticulation, and in some cases removes the stapes also, if possible. Gain in hearing may be distinct or but little,—no unfavorable results are reported,-but vertigo was each time lessened or relieved.

### REMOVAL OF THE STAPES FOR THE RELIEF OF DEAFNESS.

This operation, first advocated by Kessel in 1875, and occasionally done by accident or intention since, was given a fuller trial by Jack, of Boston, as previously reported in these columns, with favorable and promising results. An additional group of cases has been published by Burnett in the *Medical News* of March 13 and by Blake in the *Archives of Otology*, and more extended experience has been reported by Jack, with continued immunity from bad results. But at the meeting of the American Otological Society in July both of the latter operators reported some unfavor-

able cases and acknowledged the dashing of the hopes at first entertained. Similar reports come from various directions, with occasional successes; but most aural surgeons are feeling their way very cautiously in the matter, and have been unwilling to extol or decry the measure on the basis of very few experiences. It is so rational, in view of our knowledge of the pathology of many cases, to free or extirpate the stapes, if this can be done with such safety as these instances generally indicate, that it will be a severe blow to the hopes of many if it prove unsafe or futile. Yet Bezold caused such serious vertigo, vomiting, and fainting in his first patient that he fears to repeat the experiment, although she recovered after some weeks a portion of the hearing of which the operation had totally robbed her. In this case the vestibule had not been opened or drained. Lemcke reported at the same meeting of the German Otological Society one unintentional extraction of his where hearing was diminished after it. had extracted in one case with production of but slight vertigo and some gain in hearing. It is singular that the suppurative cases, where the peril of septic infection of the labyrinth would seem greatest, have not yet given as unfavorable results as some easy and almost ideal cases for operation.

#### STACKE'S OPERATION OF OPENING THE ATTIC AND ANTRUM FROM THE MEATUS.

In the Société Française d'Otologie et Laryngologie, Dr. Lubel-Barbon reports upon the excellent results obtained in some cases by this measure. Of eight cases cited (the results of five subsequent ones are not given), four were fully cured, although some were unaided by excision of the ossicles. Four were still under treatment, one being a case onlarge cholesteatoma of the antrum region, suspected but not surely diagnosticated until found and removed in the operation. Similarly good results were reported by Dr. Holmes, of Cincinnati, at the Milwaukee meeting of the American Medical Association, although he follows Schwartze's modification in trephining the mastoid and opening the antrum before attacking the tympanum from the canal. The operation is thus somewhat easier to do safely and more complete in such cases as demand this more radical measure. Where not clearly demanded, any needless opening of the mastoid tissue is to be deprecated. The chiselling is rather dangerous work in these operations, and rongeurs have been devised by Hartmann, Politzer, and Dench, and the dental burr has been used by Snarezde Mendoza and

warmly commended. Such intervention is certainly more complete than mere excision of the ossicles in cases of attic caries, and although reserved for the worst cases, or as a later measure where excision has failed, is likely to be more and more employed in the future.

### A NEW TREATMENT OF MAMMARY ABSCESS.

TWEEDY (Medical Press and Circular, July, 1893) adopts Weber's method of treating mammary abscess.

An early and free incision is made in the breast, radiating from the nipple, and situated at the most dependent part of the abscess.

The finger is then inserted into the wound and the gland structure broken down. This manipulation, it is stated, will have no bad effect on the healthy tissue.

By this process several new cavities will be found, and these, in turn, are to be opened by an incision similar to the first, and the whole thoroughly douched with some antiseptic solution.

The membrane lining the several cavities is to be curetted, and the *débris* removed by a second douching.

Strips of gauze sufficient to fill every interstice of the abscess are to be steeped in a one-per-cent. solution of carbolic acid, and inserted by means of a long sinus forceps and probe. A large, flat sponge is then placed on the breast and tightly bandaged thereto for twenty-four hours. After this period the dressings are removed, and without further irrigation the cavities are again packed, the sponge and bandage being reapplied as before.

On the third day the process is repeated.

In the fourth dressing the gauze packing is dispensed with and the incisions are drawn together and dressed antiseptically; the sponge and bandage are reapplied.

This last process is repeated every twentyfour hours until healing is complete; this usually takes place about the tenth day. In one of the author's cases the whole process was accomplished without the aid of anæsthesia. In only one of his cases was it necessary to make a second incision. The incisions are never longer than is necessary to admit a finger.

Iodoform gauze should be used for packing the wounds.

The author only having treated five cases, cannot say definitely what portion of the above treatment is essential, but he is strongly inclined to the opinion that curetting can be safely dispensed with.

### THE TREATMENT OF FRACTURES OF THE LOWER EXTREMITY.

SCHMID (Centralblatt für Chirurgie, August, 1893) holds that in the treatment of fractures of the lower extremity immobilization must not be carried out too long, and that the joint must be kept as free as possible; passive motion, especially in fractures involving the joints, must be begun early.

In all fractures below the lower third of the femur a plaster-of-Paris bandage is applied, the joint being as free as possible, and the patient is allowed to get up in a week. This, in old people, is a great advantage, as all dangers from too long confinement to bed are avoided.

The author is of the opinion that the fractures unite with greater rapidity when the patient is allowed to go about than when confined so long in bed.

After a patient is admitted to the hospital, the fracture is reduced and the limb surrounded with a plaster-of-Paris shell and elevated. The seat of fracture is then surrounded by an icebag in order to hasten the absorption of blood.

In from three to five days all swelling has disappeared, the limb is again subjected to strong extension and counter-extension, and a plaster-of-Paris bandage is applied. The next day the patient gets out of bed. If the swelling has not entirely disappeared, or the exact position of the fracture is not known, the plaster bandage is removed on the eighth day and again applied. The patient uses crutches for the first two days, then two sticks or canes for the next two days, then one cane. When the plaster dressing is removed, the limb is to be bathed, douched, and massaged, and the function of the joint re-established by passive motion.

#### RECOVERY FROM CHRONIC GLANDERS.

Holmes (Journal of the American Medical Association, August 12, 1893) holds that glanders is rare in man, and that it presents itself in two forms,—one acute and rapidly fatal, terminating, as a rule, within two or three months; the other chronic, from which the patient may recover after one, two, four, or five years.

The author reports the following case: The patient, a well-developed man, aged twenty-two, had always been well and strong, and lived on a farm all his life. Two of the horses under his care died of glanders. Some time during the middle of December, 1889, a felon appeared on one of his fingers. There was no adenitis

nor lymphangitis, and no rise of temperature nor chill. Before the felon was entirely healed five suppurating foci appeared in different parts of the body,—one at the elbow, one at the vertex, one on the right side of the lower maxilla, one in the right thigh, and one in the right These foci appeared three weeks after the beginning of the so-called felon. They each began with a sharp, stinging pain, much like a bee-sting, with deep swelling and little or no ædema or redness. When the patient was first seen the temperature was 100° F. and the pulse Q2. When the sores opened they presented somewhat the appearance of tubercular abscesses, but with this difference: the abscesswall was covered with a firm, hard, almost shot-like, bright-red granulation tissue, and the exuding secretion was sanguinolent. Inoculation on guinea-pigs and rabbits proved the presence of glanders. The treatment of this case is most important, since it ended in re-The five abscesses were opened under ether, curetted, and swabbed out with a saturated solution of sulphate of zinc. They were then packed with iodoform gauze wet with a saturated solution of iodide of potassium. The wounds healed slowly. During the entire course of the disease the patient had fourteen foci of ulceration.

#### FIXING A DISPLACED LIVER.

RICHELOT (Medical Press and Circular, July, 1893) relates the case of a woman, aged twenty-eight, in whose right iliac fossa could be felt a painful floating tumor. The patient was seized from time to time with bilious vomiting and fever, so that she had to cease all work. Believing it to be a case of typhlitis, the author opened the abdomen and laid bare the tumor, which was found to be the liver, fixed by adhesions to the iliac fossa. The adhesions having been broken up, the liver was pushed up as high as possible and fixed. The result was very favorable; the patient suffered no more inconvenience and could walk about with ease.

### THE TREATMENT OF WOUNDS OF THE BRAIN.

ADAMKIEWICZ (Therapeutische Monatshefte, August, 1893) claims that the various antiseptic solutions exert a harmful influence on the brain when used in the treatment of wounds of that organ.

Solutions of carbolic acid and boric acid were injected into the brains of animals with a Pravaz syringe, and various disturbances were

produced, and in many of the experiments the animals soon died.

There is always great danger of producing a meningitis after the use of antiseptic solutions; at the same time no bad results have been reported after the use of sublimate or carbolic acid. A three-per-cent. solution of boracic acid is too weak to be of any special value as an antiseptic.

AN ORIGINAL METHOD OF RESTORING
THE ALVEOLAR ARCH IN ANTERIOR
CLEFT OF THE HARD PALATE
AND OF CORRECTING THE
DEFORMITY OF THE
ALÆ NASI IN
HARELIP.

WYETH (Journal of the American Medical Association, August, 1893) says that it is a common experience, after plastic work on the soft parts in cases of complete harelip and cleft palate, for the ala nasi of the affected side to still remain misshapen, flat, and sunken.

If the maxilla be normal and the alveolar arch in front complete, each ala nasi rests upon a bony surface and foundation on the same plane, and the two are naturally symmetrical. If one is deficient, the nostril of that side sinks down and out of line, just as the corner of a house does when the underpinning is not high enough. In certain cases of anterior cleft the intermaxillary process is adherent to one side (long side) and projects in a clumsy fashion, usually to the front and upward. In these cases the old method of bending or forcing this misplaced process over to the short side and holding it in contact until union has taken place completes the arch and gives a suitable foundation for successful plastic work on the nostril and lip.

When, however, this process is absent or largely deficient, we find one ala nasi resting upon a normal portion of the alveolar arch on one side, while on the other it recedes from one-half to one-quarter of an inch, resting upon an imperfect maxilla and alveolar process.

In four such cases the following operation was devised and carried out: About one-quarter of an inch from the edges which are to be brought in apposition a hole was drilled through the bone and a strong silver wire carried through, ready to be tightened.

The edges were freshened by slicing off the mucous membrane lining the bone with a strong scalpel or scissors. With a very strong pair of scissors in very young infants, or a bone-cutter, the alveolar arch and maxilla of the short side was divided about half-way of its length and at

right angles to the dental surface. By introducing a stout cord of silk or wire into this fissure, and making strong traction forward, the undivided portion was fractured and loosened, when, by tightening and twisting the silver wire previously introduced, it was brought forward and firmly anchored.

the expose

ger of the

itisepoc in

ilis han .

lmate 3 -

lution :

7 SD012 :

IF 0:-

V ASTE

C THE

nias I

12115;

tas.

小湿.

ectecis: unhan

the ele

5 1533

n de e

TER.

uses

1000

SEC.

1 (82)

TEC

her I

this :

263

2

100

35

3

TO

ونے

4

55

15

ď

Ì

ΉE

Since the nutrition of the bone in its new position is derived temporarily from the adherent soft parts, these are not disturbed until the bone unites in its new position. From six to eight weeks should elapse before plastic work on the lip and nose is undertaken.

Early operation is essential, always within the first years of life, and preferably within the first few weeks after birth, provided that the nutrition of the child be good or can be improved by forced feeding.

### GASTROSTOMY AND THE FORMATION OF AN ARTIFICIAL ANUS.

HELFERICH (Therapeutische Monatshefte, August, 1893) describes as follows the formation of an artificial anus: The abdomen being opened, the peritoneum is sutured to the skin by means of a continuous catgut suture. The colon is drawn out so far that an opening can be made in the mesentery and a rubber tube surrounded with iodoform gauze pushed through and fastened outside of the wound. This prevents the gut falling back into the abdomen. In from three to six days a spindle-shaped piece of the colon is removed in the long axis, so that the edges of the incision will not have a tendency to come together.

In operating for impermeable stricture of the œsophagus, an incision should be made above the navel parallel and to the left of the linea alba, completely dividing the rectus. Two flaps are then dissected up from the outer surface of the stomach parallel to each other and to the abdominal wound. A small opening is made through the remaining tissue into the stomach and a rubber tube intro-These two flaps from the outer surface of the stomach are then sutured together around the tube with catgut, forming a sort of This canal is then sutured to the abdominal wound and allowed to heal. When food is required, a tube can be introduced into the stomach through this artificial canal.

### REPORT OF A CASE OF SPLENECTOMY.

PAINE (Kansas City Medical Index, August, 1893) claims that operations on the spleen are most successful when necessitated by trauma-

tism. Nussbaum states that in twenty-six examples of complete extirpation of the spleen necessitated by injury of the abdomen, sixteen were successful. Ashhurst has collected twenty-one cases terminating in recovery. Herbert reports twenty-nine splenectomies for diseased conditions; sixteen were for leucocythæmia, and all were fatal. Of the remaining thirteen cases, eight recovered. Ashhurst has collected forty-three cases of splenectomy for disease, thirty-one of which terminated fatally.

The author's case, a young girl, aged twentyfive, had always lived in a malarial district, and had suffered from irregular attacks of malaria since childhood. At the time of examination a movable tumor was discovered in the lower part of the abdomen, which slowly increased in size and gave rise to constant pain. Some months later, after a protracted attack of fever, the tumor became fixed in the left iliac region. At the time of operation the patient was much emaciated and anæmic, and had a temperature varying between 100° and 103° F. Quinine was freely used, but without any appreciable The linea alba was incised for four inches; hemorrhage was very free, but was promptly controlled by pressure forceps. peritoneum was incised and the omentum found firmly bound to the spleen. This was detached. and revealed extensive adhesions between the displaced viscus and the surrounding parts. The adhesions were carefully broken up and ligatured when necessary. The most difficult and critical part of the procedure was the tying and liberation of the extensive vascular adhesions between the upper border of the spleen and the transverse colon. The pedicle was then transfixed with a double ligature and tied, the ligatures cut short, and the pedicle dropped back into the abdomen. The peritoneal cavity was thoroughly douched with Thiersch's fluid and mopped dry with sponges. The external wound was closed with interrupted suture, no drainage being used.

The extirpated spleen weighed about three pounds. The patient entirely recovered and was out of bed at the end of three weeks.

Faintness and persistent vomiting did not follow the operation, and no enlargement of the lymph-glands could ever be detected.

### WOUNDS OF THE HEART.

LUMNICZER (International Journal of Surgery, August, 1893) has reported five cases of wounds of the heart and pericardium, only one of which terminated fatally; and Peebles, of Omaha, reports a case of bullet wound of the

heart with recovery. Notwithstanding the perfection of our methods of examination, the diagnosis of heart wounds is still a matter of extreme difficulty. There is no pathognomonic symptom, and the diagnosis must be arrived at from an analysis of the symptoms. Hemorrhage, pain, frequent attacks of syncope, and the physical signs of hemorrhage into the pericardium are usually found present. Dyspnœa is a less constant symptom.

Cases in which the heart has been perforated by a needle give the best prognosis; then follow penetrating and gunshot wounds. Sudden death after heart injuries is due chiefly to shock, to anæmia of the brain and lungs, and to inability of the heart to contract, both in consequence of the wound and because of the pressure of the pericardial effusion. In cases where death does not occur for a number of days. it is usually attributable to some complicating lesion, such as inflammation of the pericardium and, less frequently, of the cardiac tissue. If death is delayed to a more remote period, it is due to the giving way of the cicatrix or to accumulation of inflammatory products in the pericardium.

In the treatment of such injuries opium should be used to relieve the pain, stimulants to counteract the shock, and cardiac sedatives to prevent excessive action. In the treatment of complicating pericarditis and pleuritis the aspirating-needle deserves a prominent place. In one case the wound was enlarged and the cavity of the chest thoroughly explored with the finger and the heart lesion packed with gauze. The case recovered.

### HEMORRHAGIC INFARCTION OF THE SCROTUM.

ENGLISCH (Prager Medicinische Wochenschrift, 1893) reports three cases of hemorrhagic infarction of the scrotum. The disease consists essentially in a thrombosis of the veins of the pampiniform plexus; in consequence, the vessels are distended with red blood-corpuscles, the smallest appearing on the point of bursting. The different structures of the testicle are crowded apart and an effusion of blood takes place on the inner surface of the tunica fibrosa. The symptoms are usually indefinite and generally point to the presence of peritoneal trouble. Abdominal pains radiating towards the scrotum, vomiting, diarrhœa, and fever are followed on the second or third day of the disease by swelling of the scrotum, and induration of the cord. The epididymis is not markedly involved. Although the scrotum appears greatly swollen, an incision gives vent to a remarkably small quantity of fluid. The testicle is only slightly sensitive, and when incised its substance appears of a dark-brown color, the vessels being greatly distended. The lumen of the seminal ducts is, for the most part, obliterated.

Experiments on animals have shown that ligature of the internal spermatic artery, as well as of the pampiniform plexus, produces the same appearance as hemorrhagic infarction.

The author has not infrequently observed hæmatoma of the spermatic cord in children, which closely resembles, externally, the disease under consideration. The majority of these children are born in the breech position.

Nicoladoni regards torsion of the vas as the etiological factor, and as the affection involves especially the left testicle, the length of the veins must be considered of some significance. The author thinks it possible that strong contraction of the abdominal walls might produce coagulation of the blood in the internal spermatic vein, although in most cases no history of mechanical irritation could be obtained. It is worthy of note that the peritoneal symptoms precede the development of the tumor, and that some of the patients were in collapse when admitted to the hospital.

As regards the treatment of these cases, Volkmann recommended castration as early as possible. The author advocates an expectant plan of treatment; at first strictly antiphlogistic. At the end of a few days deep incisions may be made into the substance of the testicle, since in this way it may be possible to preserve a portion of the gland. In one case the disease was arrested by antiphlogistic measures, and although the testis underwent atrophy, the epididymis and vas retained their normal size.

#### THE TREATMENT OF BUBO.

RICHTER (International Journal of Surgery; International Klinische Rundschau, 1893) has employed injections of the benzoate of mercury in thirty cases of bubo. This method is applicable to all stages of the affection, and even to cases where extensive fluctuation with thinning of the skin is present. In cases of slight glandular enlargement without cutaneous redness or tendency to suppuration, the treatment has not been employed.

As regards the technique, the strictest antiseptic precautions are employed. The canula of the syringe should be boiled before each injection, and the syringe should be disinfected in a five-per-cent. carbolic-acid solution.

The skin over the bubo is shaved and disinfected with sublimate solution (1 to 5000) and washed with ether and alcohol. The injections are made at three places into the swelling, half a syringeful being injected each time, and if fluctuation is present, usually at the point where this is most marked. After injection Burow's solution is applied (alum, 5 parts; acetate of lead, 25 parts; distilled water, 500 parts), and compression exerted by a cushion of wood-wool and a gauze bandage. After injection the pain increases in severity for four or five hours and then subsides, together with the inflammatory phenomena. In two cases swelling of the joints In fourteen cases where no flucdeveloped. tuation existed, this condition was developed by treatment. In thirteen cases where fluctuation was present, it was increased. Disappearance of fluctuation, with absorption of the liquefied glandular matter, was observed in only three cases.

As the fluctuation always increased after injection, early puncture was made. The punctured opening was prevented from closing by a strip of iodoform gauze, and was irrigated daily with sublimate solution (r to 5000). Of thirty cases treated in this manner, twenty-five were cured, the average period being twenty-seven and a half days. In twelve cases where the inflammatory symptoms failed to subside after the first injection, followed by puncture, the injection was repeated.

### A NEW METHOD OF DIRECT FIXATION OF FRAGMENTS IN COMPOUND AND UNUNITED FRACTURES.

SENN (International Journal of Surgery, August, 1893) makes an earnest plea in favor of more frequent recourse to direct means of fixation in compound and ununited fractures.

His conclusions are as follows:

- 1. Direct fixation of the fragments is indicated in all compound fractures in which perfect retention cannot be secured by simpler measures and in the treatment of ununited fractures requiring operative interference.
- 2. This method is also justifiable in certain forms of subcutaneous fracture in which reduction and retention cannot be accomplished without it.
- 3. Free exposure of the fragments in compound fractures secures the most favorable condition for thorough disinfection.
- 4. Perfect reduction and direct fixation of the fragments are the most reliable prophylactic measures against delayed union, non-union, and deformity.

- 5. A compound fracture should be regarded in the same light as an injury to the soft parts, and should be treated upon the same principles.
- 6. Bone sutures and ivory nails do not furnish the necessary degree of support and immobilization in the direct treatment of fracture.
- 7. The hollow perforated bone or ivory cylinder devised by the author answers the same mechanical purpose without the objections which have been charged against the solid cylinder. Such cylinders should be made from the shafts of long bones of young animals, such as chickens, turkeys, or rabbits.
- 8. Fractures not requiring drainage should be closed with buried and superficial sutures.
- 9. The external splint should be so applied as not to require changing during the entire course of the treatment.

A CASE OF SUPRAPUBIC CYSTOTOMY IN WHICH THE BLADDER WAS DISTENDED WITH AIR INSTEAD OF WATER, AND FOUR HUNDED AND NINETY-FIVE CALCULI REMOVED.

KEEN (Journal of Surgery, Gynacology, and Obstetrics, July, 1893) reports the case of a man, aged seventy-five, who for several years had been passing small calculi with the urine at frequent intervals and in considerable quantity. Four days before the operation he had retention. Examination by the rectum showed a very large prostate. In operating upon the bladder air was injected into this viscus until it formed a distinctly elastic tumor in the middle line. At its upper border was another tumor one inch and a half in diameter, which was found later to be a distended pouch. As soon as the bladder was opened the air escaped. The edges of the bladder wound were seized with hæmostatic forceps, and the calculi were removed with the finger and a scoop. They were counted after the operation and found to be four hundred and ninety-five. The entire weight was three hundred and eighty-six grains.

The rectal bag was not used during the operation, for it was found that the bladder could be lifted up more with the air alone than with the rectal bag.

The use of air has the advantage that there is far less danger of rupture of the bladder, because the air is much more compressible than water and it lifts the bladder better. Another advantage of the air is that it gives a dry wound instead of one filled with blood and stained fluid.

in later years by the use of jequirity, brossage, scarification, and antiseptics in the treatment of trachoma, lead Masselon to hope that an operation for entropion, safe and lasting in its results, will tend to increase the number of cures, and to some extent reduce the number of unfortunate victims of this distressing malady.

# THE TREATMENT OF ULCERS AND ABSCESSES OF THE CORNEA BY CURETTING AND IRRIGATION.

WECKER (Annales d' Oculistique, July, 1893) for some time has treated ulcers and abscesses of the cornea by means of curetting and antiseptic irrigation. He claims the most astonishing results, the most important of which are: (1) the instant suppression of the pain and the photophobia; (2) clearing up of the surrounding parts, followed by a more rapid cure than is obtained by the use of various antiseptics, and particularly by the actual cautery; (3) restoration with a more transparent tissue than by any other treatment. The ulcers and abscesses are operated on with a small curette differing very little from the model of Critchett, except that it is one-third as wide and has sharp edges. He endeavors as much as possible to remove from the base and edges of the ulcer the sloughing material adherent to it, the operation being done under a spray of a four-per-cent. solution of boric acid.

### ON THE VALUE OF FORMIC ALDEHYDE AS AN OCULAR ANTISEPTIC.

M. VALUDE (Revue Générale d' Ophthalmologie, July, 1893) believes that in the estimation of the respective values of different antiseptics the mistake is made of trying to compare substances whose action on micro-organisms is absolutely different. Thus, sublimate, which as a microbicide is endowed with a power superior to any other known antiseptic [this statement is not correct.—ED.], must nevertheless yield to aniline substances under certain circumstances, when special tissues impregnated with pathogenic microbes are to be thoroughly permeated. This means, not that the aniline substances are more antiseptic than sublimate, but only that in the cases where diffusibility is required their action is superior.

With Dr. Dubief, Valude studied a substance possessed of a very interesting aseptic quality,—namely, formic aldehyde. Formic aldehyde appears in the form of a colorless liquid in the pure state, which, when dissolved in water,

with which it is very miscible, has only a very slightly empyreumatic odor. Formic aldehyde is very greedy of water, consequently very diffusible. Another advantage is that it does not coagulate albumin, nor is it poisonous, or only slightly so, since a certain quantity of it may be drunk with impunity. Other than this, it resists the action of light, even in a bottle insecurely corked.

The aseptic properties of this substance are exceedingly remarkable. They have been studied by Duclos with the very small dose of .016 milligramme to the litre. He prevented the development of microbes in meat-broth, and, with the vapor produced by allowing the open bottle to remain under a receiver, he succeeded in preventing a piece of meat from decaying through a period of several weeks. The actions of sublimate and formic aldehyde differ; advantages may be derived from the special properties of each. Sublimate is an immediate antiseptic, but one whose effect ceases as quickly, for it is well known that conjunctivas washed with sublimate betray micro-organisms on the next day. From this point of view, different results might be obtained from formic aldehyde, which insures prolonged sterilization. In the cases of patients destined for operation, Valude has performed disinfection with sublimate (1 to 2000) on one of the eyes, and on the other with formic aldehyde in the same dose. The conjunctivas washed with aldehyde were sterile fourteen times out of sixteen, while with sublimate the same fact was noted in only half the cases. As it is very difficult to determine, in such ocular infections as purulent conjunctivitis or post-operative infection, whether the treatment used acted by killing existing microbes or by preventing the development of new infections, he desired to experiment with formic aldehyde, which possesses the latter property to a high degree. In chronic conjunctivitis, where pus is constantly reproduced, pus, moreover, which resists every treatment,he has obtained the best results with repeated instillations of formic aldehyde, and with the same instillations he has also been able two or three times to arrest post-operative infections which were in a fair way to cause panophthalmitis. He considers it a valuable agent in such cases, and has used it with equal success in the ophthalmia of new-born infants.

There is one result which may be gained by this powerful aseptic, which is the prolonged sterilization of collyria, which do not precipitate with formic aldehyde as with sublimate; in fact, particles of atropine and eserine remained unchanged for more than a month. The simple sterilization of collyria is, therefore, according to the reporter, a solved question, and in order to assure it it is only necessary to use aldehyde in the dose of 1 to 2000. Finally, formic aldehyde has no influence upon the metals, and therefore is a good liquid for an instrumental bath. It does not irritate the eye, but causes only a passing smarting, which is increased by strong doses, but unimportant with solutions of 1 to 2000.

## CONCERNING OCULAR SYPHILIS AND ITS DIFFERENT METHODS OF TREATMENT.

M. CHIBRET (Revue Générale d'Ophthalmologie, July, 1893) thinks that the best general treatment for ocular syphilis consists in the hypodermic injections of soluble salts, particularly the cyanuret of mercury. The best method of local treatment varies according to the seat of the syphilis. Syphilis of the cornea and of the choroid are favorably affected by subconjunctival injections of soluble salts, whereas syphilis of the iris is insensible to this treat-The combination of local and general treatment for corneal syphilis has produced more successful results than have hitherto been obtained by any other method. The unpleasant results by injections of soluble salts are, in the first place, a slight local pain, then diarrhoea, indicating acute poisoning, which is easily avoided and checked by the prudent adminis-The advantages tration of suitable remedies. of this method consist in the rapidity and intensity of the therapeutic action, as well as in the accuracy of the doses. The common unfavorable results from other medications are particularly symptoms of chronic poisoning, such as salivation, anæmia, and symptoms which readily result from intense or prolonged treatments. Iodide of potassium is of no specific value for syphilis. It facilitates elimination of mercury and is effective in combating poisoning. As an adjuvant to mercurial treatment, it diminishes its specific effects. it might possibly be expedient to combine or to alternate iodide with mercurial medications which incur the risk of chronic poisoning, it is certainly useless, in the belief of Chibret, to administer it conjointly with injections of soluble salts.

Trousseau believes that the treatment by inunction would always be the most successful if the rubbings were well done, which is rarely the case. Comparative results of treatments by subconjunctival injections and by careful rubbings are the same. The advantage is,

therefore, with frictions, because they are more manageable. His own experience is that parenchymatous keratitis yields best to inunction, if it is carefully done from the beginning.

M. Panas, stating that he is the first in France to recommend the use of mercurial inunctions, believes it is his right to speak in their favor. He desires to say, however, that subcutaneous injections of mercurial salts (biniodide of mercury dissolved in sterilized oil) are greatly superior. He considers iodide of potassium preferable to mercury in the treatment of interstitial keratitis.

Parisotti protests against the strictures concerning the injections of calomel. He has long used them in his practice, always employing antiseptic precautions, because the substance itself is not antiseptic.

Sulzer agrees with Parisotti that local accidents may be avoided in the injections of calomel. The great danger of these injections consists in the fact that a possible mercurial intoxication of the most intense form might be maintained from the immovable deposit of mercury which has been placed in the organism.

Galezowski insists upon the fact that exploration of the ciliary region with the ophthalmoscope in interstitial keratitis demonstrates choroidal lesions which are the evident symptoms of syphilis, and recommends mercurial inunctions continued for two years.

Gillet de Grandmont prefers injections of soluble salts to inunctions.

Chibret, in closing, declares that the advantage of cyanuret of mercury over other mercurial salts consists in the fact that the former does not cause albumin to coagulate, and, when passing off, remains soluble in the tissues. Sublimate and biniodide, which coagulate albumin, are then transformed into soluble salts.

TREATMENT OF AFFECTIONS OF THE LACHRYMAL CANALS BY CONSERVA-TIVE AND ANTISEPTIC METHODS. A NEW PROCESS OF LACH-RYMOTOMY.

Bourgeois (Revue Générale d'Ophthalmologie, July, 1893) argues that the natural form of the lachrymal canal should be preserved. Removal by constriction, formerly so frequently practised, should be exceptional. The basis of treatment is injections, or spraying of antiseptic solutions, such as boro-borax and sublimate. These sprayings are made by means of a hollow probe passed through the inferior canaliculus. If the latter is contracted, especially

sion as Gray's Anatomy. It forms a complete, concise, and accurate guide to the medical student who is studying the anatomy of the human body at the dissecting-table. The revisions which have been made to this edition have been designed to bring the book up to the level of the present requirements in the various examining boards, and an effort has been made to condense the book as much as possible. Notwithstanding this fact, new matter to the extent of one hundred and fifty pages has been The plates of arteries prefixed to the last three editions and a number of histological illustrations have been expunged. The volume now forms a handy manual of seven hundred and fifty pages, small octavo, and will doubtless continue to be as popular as heretofore, although its price (five dollars) must necessarily tend to make a market for cheaper manuals.

A TEXT-BOOK OF MEDICINE FOR STUDENTS AND PRACTITIONERS. By Adolf Strümpell, M.D. Second American edition, revised from the sixth German edition, by H. F. Vickery, A.B., M.D., and Philip Coombs Knapp, A.M., M.D. With editorial notes by F. C. Shattuck, A.M., M.D. Illustrated.

New York: D. Appleton & Co., 1893.

There is probably no text-book upon the practice of medicine in the English or German language which is equal in quality with that of Strümpell. Its nearly eleven hundred pages. closely printed, in comparatively small type, contain an amount of information which is not to be found in any similar book. This American edition also has one characteristic which separates it distinctly from many other works of German authors which have been translated into English, in that the diction is so clear and smooth that one feels as if the author must have written in English instead of in German. translators are, therefore, to be congratulated upon having accomplished their work with unusual success.

Among the points which strike us as worthy of note may be mentioned the statement that gurgling in the right iliac fossa is not of as much diagnostic importance in typhoid fever as has been generally taught, and we are surprised to find that Strümpell does not consider tympanites a common condition in this disease. He believes that typhoid pneumonia is due to the localization of the typhoid poison in the lung and not to a double infection. The diet which he allows in enteric fever is certainly much more free and liberal than that which is commonly employed in America. Another point of interest is that he strongly recommends the class of remedies known as "antipyretics," a recommendation which we are rather surprised to find emanating from Germany, and which is certainly not the opinion of the best practitioners in this country. the article upon "Disinfection" (which has been added by the editor, and which is chiefly derived from the report of the American Public Health Association) we find that mixtures of corrosive sublimate and potassium permanganate, or sulphate of copper, are advised. We do not believe that either corrosive sublimate or potassium permanganate should ever be used mixed with anything but water for such purposes. The only criticism that could be offered upon the article on "Enteric Fever" is that the discussion of its treatment is too brief and the directions are not sufficiently definite. note that for the membranous sore throat of scarlet fever peroxide of hydrogen is considered the best remedy, and for the enlargement of the cervical glands in this disease carbolicacid injections are recommended.

For the scarlatinal inflammation of joints the author recommends the employment of from 45 to 60 grains of salicylate of sodium, which is an enormous amount of this drug to administer to a child, even in rheumatism, and the editor does well in placing an exclamation mark after the recommendation of such a dose.

The description of rötheln is, we think, disappointing.

We note that the author does not recognize the identity of the streptococcus of pus and erysipelas, and the Klebs-Löffler bacillus is not positively recognized as the cause of diphtheria. Although the author believes that membranous croup and diphtheria are identical, the editor seems to doubt this conclusion. The only mention of amæbic dysentery to be found in the book is that made by Dr. Shattuck; and the articles upon "Yellow Fever," "Dengue," and "Typho-Malarial Fever" are also by the editor. Quinine and salicylates are recommended in cerebro-spinal meningitis. recommendation we believe to be distinctly erroneous and calculated to increase the severity of the attack. The nervous diseases affecting the larynx are placed under the general heading of the "Respiratory Diseases" rather than those of the nervous system.

In regard to the treatment of bronchitis by compressed air, Strümpell expresses an unfavorable opinion, and the wet pack, which is recommended on page 184, would become a hot pack in a few minutes, and would accomplish quite the opposite result from that which is desired.

We are interested to note that the author believes that phthisis is a rare sequelæ of croupous pneumonia, which, we think, hardly accords with the experience of American physicians; but the important point is emphasized that heart-failure often results, in pneumonia, not from the pulmonary disease, but from unrecognized pericarditis. The advantages of climate in the treatment of phthisis do not seem to be well recognized by the author. The article upon the "Diagnosis of Heart-Disease" is, we think, disappointing, although the subject is, of course, a difficult one to deal with.

1

2

ī

,

t

۲<u>۰</u>

i:

t

We have made these criticisms as we have gone over the pages of this interesting work not for the purpose of condemning any part of the book, but simply because they stand out prominently in contrast to the general excellence of the volume.

We are not surprised that the book has reached the sixth edition in its native land and a second in this country, and we believe that the works of American authorship upon the same subject will need the protective tariff of patriotism if they expect to surpass this translation in popularity with practitioners and students.

THE RETROSPECT OF MEDICINE. A half-yearly journal. Edited by James Braithwaite. Vol. CVII. January to June, 1893.

London: Simpkin, Marshall, Hamilton, Kent & Co., Limited, 1893.

Braithwaite's Retrospect, originally holding the field as the chief summary of medical literature, has been surpassed in its scope by other volumes of newer growth, but we doubt whether these newer institutions, even if they survive the years that have already passed since "Braithwaite" was established, will possess all the good qualities which year by year are added to rather than subtracted from this valuable epitome. The selections from current medical literature which make up this volume consist of abbreviated or complete articles taken from the best journals and the best authors during the first half of the year, and the book forms a useful supplement to the current medical journal in the hands of the well-read practitioner of medicine.

ANATOMY: DESCRIPTIVE AND SURGICAL. By Henry Gray, F.R.S. Illustrations by H. B. Carter, M.D., with additional drawings in later editions. A new \*American from the thirteenth English edition. Edited by T. Pickering Pick.

Philadelphia: Lea Brothers & Co., 1893.

As is well pointed out in the publisher's notice to this new American edition, a book which since 1857 has been the recognized textbook used by the great majority of English-speaking students of medicine requires no in-

troduction to the profession. The work represents a subject which, in one sense, is the alpha and omega of medical study. Anatomy is one of the few branches which is studied by the novitiate in medicine, and a knowledge of it in its finer details remains necessary to the doctor throughout his professional career. Gray's Anatomy has no rival for the student, and, old as it is, rivals McClellan's work for the doctor. As with some of the previous editions, this one appears with colored illustrations, but naturally there is not very much that is new added to its pages. The illustrations are as clear and well defined as they have always been, and much space is saved by the familiar small type with which minor points are given.

A DICTIONARY OF MEDICAL SCIENCE. By Robley Dunglison, M.D., LL.D. Twenty-first edition. Thoroughly revised and greatly enlarged, with the pronunciation, accentuation, and derivation of the terms. By R. J. Dunglison, A.M., M.D.

Philadelphia: Lea Brothers & Co., 1893.

During the period of hibernation through which Dunglison's Medical Dictionary has passed, a number of other works, both larger and smaller, have been put forward with various claims as to their convenience and practical value; yet to the physician who wishes to have in his bookcase at once an old friend with whose methods he is familiar and at the same time a volume brought up to the latest date, Dunglison's Dictionary must remain the favorite.

It is worthy of note that the newer method, which consists in part in the dropping of the final al from certain adjectives and of the final e from certain chemical terms, has not been carried out in this work. We believe that Dunglison's Dictionary will speedily regain the position it originally held as an aid to medical literature, and that it will continue to maintain for many years to come the lead which it obtained through its sterling worth many years ago.

ESSENTIALS OF BACTERIOLOGY. FOR THE USE OF STUDENTS AND PRACTITIONERS. By M. V. Ball, M.D. Second edition. Illustrated.

Philadelphia: W. B. Saunders, 1893.

If it is possible to consider the somewhat complex subject of bacteriology in a manual of two hundred pages without the subject suffering sadly as a result of abbreviation, then Dr. Ball has accomplished his task in a very satisfactory manner. The colored plates which are scattered through the book, and the black and white micro-photographs which appear just before the index, are unusually clear and very

instructive. We doubt not that the book will succeed in the line of work for which it was intended,—namely, to give the student about to pass an examination in bacteriology the salient points which he requires for the examination-room.

CLINICAL GYNÆCOLOGY: BEING A HAND-BOOK OF DIS-EASES PECULIAR TO WOMEN. By Thomas More Madden, M.D., F.R.C.S., Ed. With 259 illustrations. Philadelphia: J. B. Lippincott Company, 1893.

This work appears in the form of lectures somewhat following the type of that admirable clinical manual of gynæcology issued by Dr. In accordance with the William Goodell. custom of our English collaborators, to the distinguished author's name as it appears on the title-page are appended a number of letters of the alphabet, and then follow some eleven tersely-expressed lines stating the honorable positions which he has at one time or another filled. To the American reviewer it is a great pleasure to find in this no doubt incomplete list that the position of honorary member of the Texas Medical Society is deemed worthy of mention immediately after an allusion to a decoration with the cross of bronze conferred by grateful France for services rendered in the war of 1870 and 1871.

After this somewhat imposing title-page follow some forty-seven lectures in which the subject-matter is for the most part very clearly presented. The American writers on gynæcology receive full credit.

The second lesson upon methods of gynæcological investigation contains the customary thrust at the modern electrical illuminators, and a speculum of the author's modification, presumably containing a candle, is suggested as fulfilling all the requirements of such an instrument.

Purulent infantile vulvitis is attributed to a scrofulous diathesis, to neglect of cleanliness, or to exposure to wet and cold. The author does not admit that a large number of these cases have their origin in gonorrhoal infection.

In discussing urethritis the pathognomonic value of the gonococcus is not accepted.

Cystitis, when it becomes chronic and inveterate, so that operative interference is required, is treated by full dilatation of the urethra, together with direct medication of the endovesical mucous membrane through the then sufficiently patulous canal. It is stated that vesical calculi in women can be removed either by lithotomy or lithotrity. No choice is expressed as to the method.

The author holds that "the most rational explanation of the symptoms of vaginismus is to

be found in the hysterical temperament of those thus affected, although in some cases there is also present an abnormal condition of the pudic nerve, one branch of which runs along with the artery to the clitoris, whilst the other, or superficial perineal nerve, is distributed to the perineum and labia, in which its terminal branches ramify freely." This throws a flood of light upon the whole subject, and leads those who have cured these cases by attention directed to fissures or ulceration in the anus or at the neck of the bladder to consider whether such cures are not the result of operation per se rather than the remedying of sources of reflex irritation. The author advises in the treatment of these cases forcible mechanical expansion of the vaginal canal. If this fails, removal of the hymen.

In considering the operative treatment of fibroid tumor, the author holds that laparo-hysterectomy should never be performed merely to relieve the patient of a fibroid tumor which does not affect her general health, and is merely inconvenient or unsightly. The nearer the menopause the less likely is the fibroid to grow or cause trouble, and therefore, other things being equal, the less likely to call for active operative interference. In citing this opinion he quotes directly, with due credit, from Mundé.

In regard to the use of electricity, he holds that in the checking of hemorrhage it is satisfactory, but that he has seen in no instance subsidence of the tumor, although in several of the cases its apparent bulk became diminished. The operative treatment of malignant disease of the uterus is reviewed at length.

The third part of the book deals with various displacements of the uterus and the mechanical and operative means of remedying them. The subject-matter of this section seems extremely sensible, and is open only to the objection that the author is somewhat discursive, not clearly indicating what are his own preferences in individual cases.

Part IV. is devoted to Diseases of the Uterine Appendages. Part V. to Menstruation and its Disorders. Then follow the Diseases and Abnormalities of Pregnancy.

It is satisfactory to find in this work many cuts of instruments the outlines of which are not obscured by the name of the maker. The illustrations are excellent, the matter is presented in a readable form, and though the work is not destined to supplement our standard text-books on this subject, it represents the practical teaching of a conscientious and experienced specialist.

# Therapeutic Gazette.

Whole Series, Vol. XVII. DETROIT, MICH., PA., December 15, 1893.

Third Series, Vol. IX. No. 12.

#### CONTENTS.

#### Original Communications.

PA	GE.
The Treatment of Neurasthenia, with	
Special Reference to the Rest-Cure.	
By F. X. Dercum, M.D	793
The Sargical Treatment of Injuries of the	
Spine. By B. H. Detweiler, M.D	800
The Therapeutics of Electricity in Rheu-	
matism. Gout, and Diseases of the	
Liver and Kidneys. By A. D. Rock-	
well, A.M., M.D	8oe
The Therapeutic Uses of Phenocoll, with	
Special Reference to its Employment	
in Malaria. By David Cerna, M.D.,	
Ph.D	•
	011
Some Points in the Treatment of the	
Uric-Acid Diathesis. By F. E. Stew-	
art, M.D., Ph.D	818
Preparing Delicate Pregnant Women for	
Labor by Proper Exercise and Feed-	
ing, and feeding at Frequent Intervals	
during Labor. By F. Gundrum, M.D.	819
A Plea for Physiological Remedies. By	
Simon Barach, M.D	821
Is there such a Thing as Galvanizing the	
Brain? By H. A. Hare, M.D.,	809

#### Leading Articles.

Concern	ing	Certai	n I	Iurtfui	Ac	tion	s of	Г
Cocai	be c	n the (	OFE	œ		••••		8
A New	Tre	atment	of S	Syphili	s		••••	. 8
Nitrate	of	Silver	in	Disea	<b>965</b>	of	the	
Stom	ьch.				••••		•••	. 8

#### Reports on Therapeutic Progress.

PAGE
Treatment of Diphtheria with Papayotin
combined with Carbolic Acid 8s6
The Treatment of Yellow Fever 83x
The Lancet's Chloroform Commission 832
Two Cases of Poisoning by the Self-Ad-
ministration of "Diachylon"-Lead-
Plaster-for the Purpose of procuring
Abortion 832
Some Considerations bearing on the
Treatment of Pneumonia 834
Treatment of Pacumonia with Large
Doses of Digitalis 836
Therapeutics of Dysentery837
On the Pulmonary Elimination of Cer-
tain Medicinal Substances, 837
The Treatment of Inebriety 838
A Case of Poisoning by Chloralose 839
Notes of a Case of Morphine-Poisoning
successfully treated by Atropine 839
Oxyvaseline in Diseases of the Respira-
tory Tract 840
The Therapeutic Uses of Exalgin 84r
The Therapeutic Indications of the Men-
opause 841
The Alcohol Question from the Physi-
cian's Stand-Point84s
Two Cases of Diabetes Mellitus treated
with Pancreas-Juice, 843,
Treatment of Acute Parenchymatous Ne-
phritis 844
Investigations on the Influence of Iron
Waters on Hæmoglobin 844
Therapeutics of Resorcin 845
Cyanuret of Mercury in Ocular Thera-
i mantian 9.6

	Treatment and Prophylaxis of Cases of
	Infection consequent upon an Opera-
	tion for Cataract 846
	Disinfection of the Conjunctival Sac 847
	Treatment of Trachoma and Lupus of the
	Eyelid by Medicinal Tattooing 847
	Subconjunctival Injections of Sublimate 848
	An Operation for the Relief of Sym-
	blepharon, or to enlarge a Contracted
l	Socket so that it may hold a Glass Eye 852
	The Effects of Antipyrin on Certain
l	Forms of Atrophy of the Optic Nerve 853
١	Tobacco Amblyopia 853
١	The Treatment of Blepharitis 853
١	The Curative Effect of Erysipelas on
١	Gonorrhæe 854
1	Ligature of the Uterine Arteries for the
I	Cure of Myoma 854
Ì	A Useful Method of Drainage in Supra-
I	public Cystotomy 854
١	The Treatment of Granulating Wounds 855
	Observations on the Immediate Treat-
l	ment of Non-Preventable Miscarriage 856
	A Case of Nerve Suturing 856
	The Value of Copaiba in Chronic Cystitis 856
-	Ansesthetics at the London Hospitals 857
	Extirpation of a Tumor of the Prostate 857
	Surgery of the Kidney in Children 857
	A New Treatment for Inoperable Uterine
	Cancer 858
	Chlorobrom in Sea-Sickness 858

Correspondence.
London Letter......

### Original Communications.

THE TREATMENT OF NEURASTHENIA, WITH SPECIAL REFERENCE TO THE REST-CURE.

READ BEFORE THE SECTION ON THERAPEUTICS AT THE PAN-AMERICAN MEDICAL CONGRESS.

By F. X. DERCUM, M.D.,

Clinical Professor of Diseases of the Nervous System, Jefferson Medical College; Neurologist to Philadelphia Hospital; Assistant Physician to the Orthopædic Hospital and Infirmary for Nervous Diseases.

NOTWITHSTANDING the many advances made by modern therapeutics, nervous exhaustion in its various forms still remains one of the most trying and difficult conditions with

which physicians have to contend. It presents such varied symptoms and is often so generalized in character that some writers even denv it the position accorded to other affections. However, even if it be not as sharply outlined as other diseases, one must admit that there is a genuine morbid state of the nervous system present in the condition known as neurasthenia. Because many of the symptoms are subjective and because patients frequently find it difficult to give us an accurate conception of the various morbid sensations which they experience, the outlines of a given case are often vague. However, the fact that certain symptoms or groups of symptoms constantly recur, and the fact that we have such definite etio-

CORRIGENDUM

logical factors as prolonged nervous strain, exhausting illnesses, and great physical or mental shock, proves that we have a well-established clinical entity before us.

Neurasthenia has always been regarded as an affection without a pathology. However, C. F. Hodge\* has shown that in nerve-cells certain changes take place due to functional activity. These changes affect all of the cell contents, and there can be no doubt that they are characteristic of fatigue. These facts render it extremely probable that there not only is a pathology to neurasthenia, but that this pathology is to be sought for largely in intracellular changes.

Hodge, it will be remembered, proved that, as a result of electrical stimulation, the nuclei of nerve-cells decrease markedly in size, and that their outlines, instead of remaining smooth, become jagged and irregular, and that they also react differently to staining reagents; and, further, that the cell protoplasm undergoes slight shrinkage in size, becomes vacuolated, and also reacts differently to staining reagents; and, finally, that even the cell capsule itself, if present, shows changes in the size of its nuclei. He further proved, by his researches upon birds and bees, that these processes take place equally in normal fatigue. Among the most interesting results achieved by Hodge is also the demonstration that exhausted nerve-cells recover their normal appearance if allowed to rest for a sufficient time; and, further, noted the fact that the process of recovery is slow, requiring many hours of rest.

Certainly we have in these facts a hint as to what is present in the condition which is known as nervous exhaustion. It is probable that the nerve-cells in a typical case undergo changes similar to those which have been described by Hodge in his experiments. However, it is probably characteristic of neurasthenia that repair either does not take place at all or always imperfectly. It seems to me that this hypothesis enables us to understand many of the symptoms presented.

The underlying feature of nervous exhaustion is a diminution in the capacity for the sustained expenditure of energy. If it be true that the nerve-cells have undergone changes similar to those described by Hodge, and if it, further, be true that for some reason complete repair has not taken place, we have all the conditions necessary to explain this symptom. Not only do the results of Hodge furnish us with an explanation of the condition presented by the

efferent or motor side of the nervous apparatus, but they also render comprehensible many of the sensory and subjective symptoms.

For instance, the backache and the headache present in neurasthenia are, if we pause to analyze them, peculiar in that they resemble the sensations often produced by normal fatigue. They seem to be grossly exaggerated fatigue sensations. Certainly the backache of neurasthenia differs from the backache of lumbago, or the backache due to actual disease of the spine or spinal contents. Certainly, too, the neurasthenic headache differs markedly from headaches due to other causes. Not only are symptoms present in the sensory and motor spheres which would suggest exhausting change in the nerve-cells, but also, as is well known, in the vaso-motor apparatus and in the behavior of the various glands and viscera. In the tendency to irregular flushing, in anomalies of sweating, in the anomalies of the secretion of urine, in the general atony of the digestive tract, we have instances of this condition. Certainly our position relative to neurasthenia has been materially improved by the researches of Hodge, inasmuch as they enable us to formulate a rational and conceivable pathology of this curious affection. From what will be said farther on, it will be seen, however, that the researches of Hodge, even in their fullest application, do not yet enable us to explain all Certainly such curious sympthat is found. toms as the tinnitus aurium, the persistent throbbing in the limbs, and the various chilllike creepings, and other strange anomalies of sensation which we meet with, still lack an explanation.

Further, another element makes its appearance when we reflect that when morbid processes continue for a length of time they are apt to be followed by more or less permanent changes,-changes that we are in the habit of referring to as "terminal changes" in discussing other diseases. We see at once that the pathology of neurasthenia may be a very complicated one. Some of these changes can occasionally be traced. Such, for instance, are the changes which are sometimes noted in the bloodvessels of chronic neurasthenics. In persons who have been the victims of nervous exhaustion for years, and in whom repair has never had an opportunity of fully asserting itself, we find occasionally that the blood-vessels have become more or less thickened,—that is, they show changes of age at a relatively early period, and the heart also gives evidence of the same thing. In neurasthenics in whom the trouble has been profound, and who have suffered for very

<sup>\*</sup> Journal of Morphology, vol. ii. p. 95.

many years, atheroma of the blood-vessels can frequently be detected with very great ease. Certainly, when the blood-vessels and heart give us the signs of premature age, we have every reason to believe that all of the other tissues share more or less in this process,—that is, in a general tendency to premature senescence. These changes, I say, can occasionally be traced in the blood-vessels. I believe that they also take place in the muscles and even in the bones, but of this direct proof is as yet wanting. extremely probable that the nervous system itself will in the future studies, made under more exact and favorable conditions, show changes on a par in their significance with those which are occasionally found in the blood-vessels.

Recognizing, then, the fact that in neurasthenia the nerve-cells undergo a change which is in all probability similar to that which they undergo in normal fatigue, and that added to this we have, due to the persistence of fatigue in all probability, secondary or terminal changes taking place, we can readily understand how it is that some of our neurasthenic cases are so inveterate, why it is that some of them yield so little to even the most radical treatment.

A third element which largely influences the results of treatment lies in the fact that some of our patients are what might be called hereditarily neurasthenic,—i.e., persons who make their start in life with a nervous system in which cell wear and tear takes place readily, and in whom recuperative power is unusually feeble. They are peculiar in the fact that their neurasthenia is manifested relatively early in life; they are apt to be feeble as children, often, but not always, of small physical development, and are persons in whom fatigue is brought about by very slight exertions, either mental or physical. I know of no more unsatisfactory class of cases to treat than these cases of hereditary neurasthenia.

The factors, then, which influence the results of treatment in neurasthenia primarily are: first, whether we have an hereditary case to deal with; secondly, if not hereditary, the time during which the neurasthenia has lasted; thirdly, in non-hereditary cases, the result is influenced, according to my individual experience, as to whether a given case be the outcome of prolonged nervous strain, or whether it has been suddenly produced by a physical or mental shock. The last group, or the traumatic neurasthenics, so called, are, in my experience, more difficult to treat than those in whom the neurasthenia is acquired in other ways.

With these preliminary observations, let us turn our attention to the means that we have

at hand for the treatment of a case of neurasthenia. From what has been said, it is evident that rest is an imperative factor. Certainly, if the waste be rapid and repair be slow, the diminution of function—the securing of as complete a rest as possible—is the object to be aimed at. We all know that absolute rest, physiologically speaking, is an impossibility; but, at the same time, that the degree of relative rest which is practicable to obtain is very great. The question in any given case naturally turns at once, How much rest does this case require? Every practical physician knows that it is most frequently impossible for persons actively engaged in pursuits of life to take absolute rest; nor, in fact, is absolute rest always a necessity. Very frequently the most astounding changes can be brought about by relative rest. In the high pressure of modern civilization, especially as is represented on this continent, the temptation to overwork is extreme; and in very many cases of neurasthenia, if the unphysiological excess of work be stopped, recovery will result. You are, doubtless, all of you familiar with the scheme of "partial" rest, so called, instituted by Dr. Mitchell, in which the patient, often an active business-man, is directed to prolong the hours of rest in bed, to rise not earlier than nine or ten in the morning, and to retire with the onset of evening. A man following this direction must necessarily curtail the hours devoted to work, and very often this simple expedient is sufficient to bring about a most favorable result. However, cases are brought to us of greater and greater severity, -cases which vary from those in which a few hours of rest in bed during the day is requisite, to those in whom absolute rest for weeks and months is imperative.

How much are we to expect from rest? As I have already said, it is exceedingly probable that permanent or terminal changes are often present in neurasthenia. This factor of itself necessitates that the results to be attained by rest will, in given cases, be limited. In others, again, it will be followed by the most gratifying results.

Finally, regarding the rest, let us remember that if our case of neurasthenia be a profound one and of long duration, this rest must be as nearly absolute as it is possible for us to make it. Dr. Weir Mitchell has already pointed out how this is to be accomplished, how in very bad cases the patient is not even allowed to feed herself, is not even allowed to turn in bed without the assistance of the nurse, is not even allowed to leave the bed to empty the bowels or void the urine. Now, while rest is undoubtedly a

factor of prime importance, rest of itself, as Dr. Mitchell has shown, is not without its attendant evils. (See Seguin Lecture and "Fat and Blood.") It is well known that a joint, if not moved, will stiffen and finally become anchylosed; it is well known that a muscle which is not exercised will waste away, and it is probable that analogous changes take place in other How to combat these evils is a problem which now presents itself. If we exercise our patient we expend his strength. Evidently the solution of the problem is to obtain the effects of exercise without this expenditure. That it is our ordinary custom to obtain these effects by massage and by electricity I need hardly point out, nor is it my intention to go over the ground already so well covered by Dr. Mitchell and by Dr. Playfair. I have only the following suggestion to make, based on my own experience. It is that these agents be used at first very sparingly, and only later in the treatment to their full extent. To this point I shall return in greater detail.

The diet in cases of neurasthenia is, of course. of prime importance, and upon its proper management will depend as much as upon anything else the result achieved in a given case. are familiar with the methods ordinarily pursued; with the fact that milk constitutes a large portion of the diet; that the patient is placed habitually upon milk at first, and that later on other food is added. The neurasthenic is almost of necessity a dyspeptic; he lacks both the desire to eat and the ability to digest food properly. He presents that train of symptoms with which we are all familiar under the name of "nervous dyspepsia." Very frequently the patient objects strenuously to the milk, asserting over and over again that he cannot digest it, that the milk will be vomited, that it gives rise to pain, and so on. The custom under these circumstances is to in some way modify the milk, either by the addition of some diluent, as weak tea or one of the carbonated waters, or peptonized milk or kumyss is administered. Most often, however, you will find that the inability to take milk is very much exaggerated, and my own habit is never to ask a patient the question, "Does milk agree with you?" I simply order it. I am careful, however, to order it in small quantities, beginning with about four ounces every two hours, and excluding absolutely all other food. amount is, of course, insufficient for the needs of the body. I now find that, even if a disgust for milk is present, the patient being placed upon a very small amount of food, and becoming in a day or two very hungry, becomes extremely grateful for the milk and takes it eagerly. habit is next to increase the milk very slowly, being careful at first to keep my patient a little hungry all of the time. Finally, in the course of a week or ten days, I increase the amount to eight, ten, or even twelve ounces every two hours, as the case may be. If I find that the patient is quite hungry by the fourth or fifth day, I add a small slice of stale bread with butter once or twice a day. This I finally permit the patient to have three times daily. The diet is then further increased by a soft-boiled egg, or perhaps by a mere fraction thereof at breakfast. Finally, a small chop or steak is given at noon, and a small quantity of thoroughly-boiled rice may be given for supper. Upon these beginnings a substantial diet is finally built up, until the patient eats three large meals a day, such, for instance, as a breakfast of fruit. cracked wheat, one or two soft-boiled eggs, or a good-sized steak or several chops, bread and butter, and milk; a dinner of a good slice of roast beef, with vegetables and boiled rice (in place of potatoes). The supper I prefer leaving as a light meal of bread, butter, fruits, light pudding, and milk. It will be noticed that in this dietary coffee, chocolate, tea, and cocoa are absolutely omitted. Further, that malt extract, cod-liver oil, and beef-tea (all recommended by others) are not used.

My own studies of these cases have convinced me that soups, beef-tea, and broths possess relatively little value; that they simply occupy space which can otherwise be given to milk, which certainly has a far higher nutritive power. The same, I think, holds true of tea, chocolate, and cocoa, while coffee is exceedingly objectionable, inasmuch as the neurasthenic is an individual who has in the vast majority of cases already exhausted stimulants, not only coffee, tea, and alcohol, but also the various narcotics, in the vain hope to find relief. I believe that coffee and alcohol, even in moderate use, should be avoided. Wine, beer, and milk-punch find, therefore, no place in my dietary.

Another element of importance in the treatment is, as Dr. Mitchell and Dr. Playfair have both pointed out, the isolation of the patient. Not only is our patient the victim of neurasthenia, but in very many instances she is also hysterical, inasmuch as neurasthenia and hysteria are often inextricably intertwined. Under these circumstances, isolation, the withdrawal of the patient from the influences of relatives and friends, is of the utmost importance. How deleterious home surroundings are under these circumstances I need not dwell upon, as they have been sufficiently discussed by others. I

need only to say that in cases of nervous prostration which are sufficiently pronounced to require rest in bed, isolation is imperative, and that it should be absolute. No exceptions should be made in favor of any relative,—mother, sister, or daughter; nor should any communication ever reach the sick-room, except through the mouth of the doctor, and then, even, should be most guarded and most general in character. My experience accords with that of Drs. Mitchell and Playfair, that even slight infringements upon this rule are sometimes followed by the most disastrous results.

We find, then, that our resources for combating profound neurasthenia comprise rest, artificial exercise (namely, massage and electricity), a special diet, and isolation.

The success which attends our efforts in any given case depends largely upon the way in which the various means at our disposal are utilized. No doubt every one who has essayed the rest-cure has developed certain methods of his own which he finds give him the best results. My own experience has led me to adopt the following: The patient is placed in bed. As a rule, she is extremely nervous and perhaps hysterical. Frequently she is a stranger amid strange surroundings. She is left by her friends in the care of a physician whom she knows only by reputation, and of a nurse of whom she knows less. It is my custom, therefore, to begin treatment in the most gradual manner, in order that the patient may become, in the first place, accustomed to her bed, for lying in bed is in the beginning quite a task to even neurasthenic people; and, in the second place, that she may become acquainted with and acquire confidence in her nurse. I, therefore, at the first visit am in the habit of examining my patient thoroughly if I find that the examination is well borne and causes no excitement, but only in part if she be very nervous. Frequently I do not finish my examination until the next or even the third visit. I simply order a small quantity of milk, as already explained, and instruct the nurse that she shall give the patient that evening a light and rapid sponge-bath, because, in the first place, the patient will have a chance to become a little acquainted with her nurse, and because the bath in most instances favors sleep. Generally I do not direct that massage shall begin until the second or third day, and then I direct the nurse to continue it only for a short time and to make it very gentle and superficial in character. My reasons for beginning the massage in so gradual a manner are, first, that the patient may become accustomed to the touch of the hands of the nurse; secondly, I direct, when I once begin with the massage, that it shall be given in the evening, as the gentle, superficial stroking which I direct to be given at first soothes the patient. Just as the diet is very gradually increased, so should the massage be very gradually increased both in depth and vigor; finally, the administration of the massage should be increased to at least an hour. Dr. Playfair recommends that the patient be massaged for even three hours. This I do not consider necessary, and am indeed doubtful whether anything is gained, if indeed something be not lost, by this prolonged rubbing.

Another point which I have come to regard as important is that the massage be performed by the nurse; this, of course, necessitates that our nurse be also an expert masseuse. My experience has been that if the patient be treated by a regular masseuse at certain intervals in the day, the visit of this third person, with whom the patient has also to become acquainted, acts as a disturbing factor; to use an every-day expression, the patients are apt to be "upset" by it. In one instance I am satisfied it was the only factor which prevented my achieving a successful result.

Regarding the details of the massage, I do not believe that they are of as much importance as is sometimes believed. The special method or school which the masseuse follows has no influence on the general result. In this I am entirely in accord with Dr. Playfair. One practical point, however, suggests itself. As a rule, you are aware that a slight elevation in temperature takes place. Occasionally the reverse is the case: a limb that has been rubbed grows cold. In the last instance the nurse should be specially cautioned not to expose the patient's person any more than is absolutely necessary.

Electricity I do not regard as of the same value or importance as massage. In this I am in accord with the writers already quoted. However, it is a remedy which I almost invariably utilize, but generally as follows: In the first place, I believe that almost all that can be gained by artificial exercise can be gained by massage, and we must remember that most patients are excessively afraid of the battery. The average neurasthenic is hysterical, and the mere mention of a battery, or the sound of the vibrations of the interrupter, will make them very nervous. Sometimes, indeed, marked depression follows its use. However, as in massage, its application must be begun in a very gradual manner. A scarcely perceptible current is at first used, and the nurse, who has been previously instructed in the points of Ziemssen, is made to use the slowly-interrupted current in such a way that each group of muscles contract a given number of times. the patient becomes accustomed to this often unpleasant sensation, the application may be limited to the forearms and legs. Later it may be applied to the thighs, arms, and trunk. Electricity is doubtless a useful adjuvant to the rest-cure, but it is only an adjuvant. same time its utility cannot be questioned. never use it early or in the beginning of a case. I am fearful—and, in fact, such has frequently been my experience—that the excitement and the irritation consequent upon its use act deleteriously upon the patient. Further, the exercise that it gives the muscles I am confident frequently tires and exhausts, and I have observed it several times to retard the increase in weight which otherwise takes place. My habit is to begin with it only several weeks after the treatment has been well under way, and sometimes only in the latter part of a case, preparatory to getting the patient out of bed.

Supposing that our treatment is now well under way, how shall we determine whether we are making satisfactory progress? In the first place, if our patient is taking a large amount of food, and massage is having its proper effect, the color of the patient should improve. tient should, as the masseuse expresses it, "pink" readily under her touch. The limbs, too, should gradually become firmer to pressure. However, another and more important guide than this is the change in weight shown by the patient. Starting with the patient much below normal weight, as many of our neurasthenic subjects are, the changes which the weight undergoes should be our guide. Occasionally it is noticed that in the first few days there is a progressive loss of weight, but soon the patient begins to gain, and in the average case gains rapidly. Patients gain in the course of from eight to twelve weeks as much as twenty-five, or even thirty-five, pounds. I can confirm from personal observation and personal experience all that has been said upon this subject by Drs. Mitchell and Playfair. One of my patients actually gained forty-two pounds in the course of three months. I have learned to regard the progressive increase in weight as the most valuable index attainable regarding the progress of a case. I consider it of far more value than the persistence or non-persistence of such symptoms as backache or headache, or general nervous feeling. My experience with the various subjective symptoms is that some of them disappear relatively early, others persist; but even the latter in the majority of cases grow fainter and fainter, until at last they no longer impress themselves upon the consciousness of the patient. In those instances in which obscure subjective sensations seem to be permanent, it is not improbable that more or less definite changes—"the terminal changes"—have taken place, and that these persistent symptoms are due to the latter.

It will be noticed that in the above plan of treatment drugs find no place. However, it is occasionally judicious to use a few remedies. Not infrequently, for instance, the indigestion of our paitents is complicated by a veritable gastric catarrh. Indeed, I may say that this is, in my experience, more frequently the case than not. I am, therefore, in the habit of prescribing nitrate of silver, say one-fourth of a grain, combined with one-fourth of a grain of hyoscyamus, to be taken half an hour before meals. Sometimes, also, at the beginning of the treatment, we find that the patient's tongue is coated and that the bowels are loaded. In such case I frequently prescribe small doses of calomel and bicarbonate of sodium until the desired effect is obtained. In other words, general principles must guide us in the use of medicines in these cases, though, as far as possible, medicines are to be avoided. In a number of cases a laxative of some sort becomes necessary. The choice of this is largely a matter of personal judgment; the simpler the remedy the better. I myself am in the habit of using the fluid extract of cascara, given at night, and, if possible, in gradually diminishing doses.

Occasionally special symptoms require special interference. It may be that the headache is so intense as to demand active interference. In this case I am in the habit of relying upon phenacetin, and sometimes administer moderate doses of bromide of ammonium at the same time. Frequently, too, the insomnia is so profound that it does not yield to the general treat-We find, however, as a rule, that patients who are taking a large amount of milk sleep a great deal. The excess of food seems to have a soporific or sedative influence, and therefore narcotics are rarely indicated. massage, too, if given in the latter part of the day, favors sleep. Sometimes, though not always, a wet sheet, followed by a gentle rubbing, or a hot sponge-bath, rapidly given, act as sedatives. Occasionally, however, insomnia is so profound that we are driven to the use, for a time at least, of drugs. The milder drugssay small doses of sulphonal, possibly of bromide-should be given. The stronger narcotics should practically never be used.

tunately, in the average case we can get along without them.

It will be noticed that strychnine and arsenic, so much vaunted in neurasthenia, are drugs rarely used by myself. They are distinctly stimulants, and should, therefore, on general principles, I believe, be avoided. In a large number, perhaps the majority, of cases the treatment can be conducted successfully from beginning to end without the use of any other drug than an occasional laxative.

Let us suppose, now, that our patient is progressing favorably; she is gaining steadily in weight; the tissues are becoming firmer; the annoying subjective symptoms are disappearing. When are we to get her out of bed? How are we to know when the maximum amount of good has been obtained by the method pursued? In neurasthenic cases of long standing it is probable that our best guide is the change shown by the body-weight. If a decided increase has taken place and it then ceases, it is probable that the maximum increase has been reached,—i.e., the maximum increase possible under the treatment. If, at the same time. our patient's symptoms have become progressively less and less, we have probably reached a period when the patient should be got out of In young neurasthenics, however, and in others in whom neurasthenia has not lasted for so long a time, it is probable that the increase in weight is not of itself a sufficient guide, inasmuch as they will sometimes continue increasing in weight until they become needlessly fat. In such cases we are to consider whether the body-weight is about normal to the height of the individual, and whether a normal body-weight has, therefore, been reached. If, at the same time, the neurasthenic symptoms are disappearing, we may consider that it is about time for our patient to be got out of bed. In getting her out of bed, we must remember that, though well nourished, she is weak. We must remember that, though the muscles have been thoroughly rubbed, and though they have been toned up by the battery, the patient has not exercised for weeks and months. She is in the condition of having accumulated an enormous amount of latent energy. This energy must now be mobilized, made potent by gradual exercise. The patient is allowed, for instance, to sit up for five or ten minutes in a day. While in bed passive movements of the legs and arms are made. Gradually the length of time for sitting up is increased, so that the patient sits up twenty to forty-five minutes, or an hour a day. Little by little the time is increased, until at the end of ten days the patient is up from four to six hours. Passive movements, which until now have been made by the nurse, are now dispensed with. For them light calisthenics are The patient is also made to walk substituted. about her room a little. Finally, a short walk out of the house or a carriage-ride follows. Next comes a trip to the sea-shore for some ten days or three weeks. During this time the patient is made to exercise in the open air. As a rule, she walks a little at first, but gradually increases the amount until two or three miles at a brisk gait is attained. The massage is little by little discontinued, and during the stay at the sea-shore occasional immersion in a hot salt-water bath, say twice weekly, is ordered. I say immersion, because a prolonged bath, in some patients, will be followed by a sense of fatigue rather than exhilaration.

During this time, also, the patient is guarded against any sudden excitement. However, she is gradually permitted to renew her relations with her relatives and friends. Finally, she is returned home, and in order to insure against. a relapse, which, under proper precautions, rarely occurs, she is told to spend some ten hours in bed out of the twenty-four, to still take her breakfast in bed, and to still keep up a moderate quantity of milk in addition to her regular Daily exercise is also insisted upon. These precautions are not absolutely necessary; at the same time they insure care on the part of the patient, and also impress the relatives and friends that the patient is not yet to be subjected to the strains of social and domestic Little by little patients break in upon the rules laid down by the physician at parting, and in the course of a number of weeks adopt the lives of the people about them. I have had the opportunity of tracing some of these patients for a number of years after a prolonged course of rest-cure, and have never met with a relapse in a case in which the patient had devoted a sufficient length of time to the treatment. My experience is, that although some patients make excellent progress in six weeks, and even seem able to return to their friends at the end of that time, these cases are prone to relapse; that the recovery is not a durable one. Time is, therefore, a necessary element in achieving a more or less permanent result. I always prefer to give the patient the benefit of from ten to twelve weeks, and in some cases even longer. Exercise, also, is a necessary element in maintaining the increased level of health. A return to the previous habits of life-often habits of indolence and dissipation—are of course dangerous to the continued

welfare of the case. One of the marked benefits accruing from the rest-cure is the fact that the patient is placed, and perhaps for the first time, under a rigid discipline,—a discipline, too, which leaves its impress upon the whole after-life and absolutely modifies for the better the previous way of living.

As already stated in the body of this paper, the rest-cure permits of several modifications, and, as a rule, some modifications must be made when the patient is a man. Men take less kindly to their beds, and frequently, too, the patient is the bread-winner of a family, and to withdraw himself absolutely from his business is an impossibility. In these cases an application of the general principles of rest and diet, as laid down above, will be found of great service. However, if the case be one of profound neurasthenia, little can be accomplished unless the rest-cure be carried out rigidly in all its details. I will not allude to the part which exercise plays in the treatment of the milder cases of neurasthenia, as it is somewhat foreign to the topic of this paper. My experience, however, has been that in cases in which the neurasthenia is well marked, the exercise had better be of a limited character and carried on under the eye of the physician or of a professional physical instructor. Violent or severe exercise, it is hardly necessary to say, invariably does harm. It is surprising, however, to what an extent the exercise can be increased if it be begun gradually, and this, I need hardly say, applies not only to the treatment of the milder cases of neurasthenia, but also to the after-bed treatment of the more severe cases.

Much might be added to the above remarks regarding the qualities which it is necessary that a nurse should possess in order that the rest-cure may be successfully carried out. Much time might also be spent upon the discussion of the use of such adjuvants to treatment as hydrotherapy. I prefer, however, to close my paper at this point, reserving the other topics for some future occasion.

THE SURGICAL TREATMENT OF INJURIES
OF THE SPINE.

READ BEFORE THE WEST BRANCH VALLEY MEDICAL ASSOCIA-TION AT WILLIAMSPORT, JANUARY, 1893.

BY B. H. DETWEILER, M.D., WILLIAMSPORT, PA.

R. PRESIDENT AND GENTLEMEN:—
I have the pleasure of presenting for your consideration a few observations on fractures and dislocations of the spine. The spine, as you will remember, is composed of a number

of firm bony segments, united by elastic and inelastic structures. The elastic bonds of union between the vertebræ—the ligamenta subflava -are the medium through which limited extension of the spine is possible. The vertebræ constitute the rigid segments of the spine, while the intervertebral tissues and ligaments constitute the extensible and elastic segments, forming the walls of a canal which is quite capacious. The spinal cord does not completely fill the spinal canal; its investing membranes are rich with their plexuses of veins and capillaries which separate the cord from the bony walls of its canal. The cord is short, extending from the foramen magnum to the lower border of the first lumbar vertebra, floating freely in the canal, attached by the nerve-roots and at the foramen magnum. It is important to recognize the topography, attachments, and terminations of the cord. At the second lumbar vertebra it subdivides into strands, forming the cauda equina. This division of the cord and its covering with elastic tissue make this portion of the spine of special interest to the surgeon. The columnar shape of the vertebral column, unsupported by the ribs, pivoting itself on the pelvis, with the strong muscles of the back and the counter-extension of the pyriform muscles and its associates of the inner pelvis, make injury at this point of the back of special Violence which leads to fracture is. in the majority of cases, directed so as to bend the spinal column forward, consequently the anterior segment will be subject to compression, the posterior to lacerations. The forepart of the vertebræ, by the peculiar structure of the bodies and the arrangement of intervertebral cartilages, is admirably calculated to resist undue pressure. The back part, by the arrangement of its numerous fibrous and elastic ligaments, is especially adapted to resist the effects of a rending force. The interlocking of the adjoining vertebræ, caused by the ascending articular processes, overlapped from behind, and their three distinct surfaces of contact and their descent from the front, have the power of limiting the motion of any two or three vertebræ within a small sphere.

Certain portions of the columns are more frequently injured than others. First in order is the dorso-lumbar; second, the cervico-lumbar; third, the atlo-axial regions. It appears that the portions more prone to injury are those where a flexible portion is joined to an inflexible part. A force directed to a flexible part will cause it to bend, but on reaching a more rigid part it will fail to yield; the force will encounter a dead resistance and overcome the

strength of the column. This injury constitutes the subject of these remarks. The broken column or spine, by its resilient power, rebounds, but may not free the cord from its pressure; if not, the portion of the body below the fracture will be paralyzed according to the amount of pressure upon the cord and the portion of the cord impinged upon. Thus, pressure upon the cervical or dorsal portion of the cord, which is more fluid, encounters less resistance than when the cauda equina is subject to traumatism, since here the cord is subdivided and encased in dense fibrous tissue. Thus, a fracture of the cervical vertebræ, with dislocation near the atlas, causes instant death. while nearer the dorsal vertebræ, if below the origin of the pneumogastric, the patient may live a long time; but if the fracture involves the third or fourth cervical vertebra, death generally ensues within sixty-four hours. I saw a case in the Pennsylvania Hospital, with the late Dr. Levis, some years ago. The man, a German, was in the ward, looking well, comfortable, pulse good, respiration hurried, entirely paralyzed. My attention was directed to this case because I secured the address of his family, who were sent for by the doctor. On returning from the end of the ward, and within a few minutes, the man was dead, the inflammation, extending up to the origin of the pneumogastric, causing death by inhibiting the respiratory

Many of our physicians will recall an accident of the same character happening to a Western lumberman who stopped at the Hepburn House some years ago. He was under the care of Dr. Pollock and Dr. McVicker. The fair condition of the patient led the doctors to think that he could live until his wife would reach him; hence, although the pneumogastric was paralyzed, he had made no provisions for death.

In the dorsal region the spine is so admirably braced by the ribs and sternum that, even though the bones are fractured, there is no dislocation of the vertebræ. The fracture is generally the result of a fall on the buttocks from a height. The sudden arrest causes the body to spring forward, and in the swaying the bony vertebræ are broken and impinge the fragments on the cord, causing death or permanent paralysis, according to the amount of injury. An interesting case of this character was under observation at the Williamsport Hospital. The extent of injury was shown by the autopsy. I presented the cord for inspection. The history of this case is as follows:

John H. Miller, aged about forty-five, was

admitted to the surgical ward October 4, without any external injury or evidence of injury, except a slight bruise. He died October 30, of paralysis. In walking about a stable, he fell down from the hay-loft. He subsequently fed the horses hay, made his bed in the barn, and in the morning found his limbs paralyzed as well as his body below the seventh dorsal vertebra. The diagnosis was injury of the spine from pressure by hemorrhage upon the cord. This opinion was formed from the fact that he had little pain after recovering from the concussion of the fall, and, as before stated, fed his horses, made his bed, and, while sleeping, became paralyzed. In time, with all the care we could command, with a water-bed, deep suppuration of the nates took place, and he died. A post-mortem revealed a fracture of the seventh dorsal vertebra, with hemorrhage of the anterior portion of the cord and impingement of a section of the anterior bony segment upon the cord, there being no displacement of the vertebra. This case is of peculiar interest, and had there not been a postmortem examination we would have had serious doubts of the cause of death. There was an intention of trephining the spine, but the general symptoms would not warrant the risk of the shock of an operation. The post-mortem revealed the fact that had the case been trephined there would have been no benefit derived from The spinal cord cannot be relieved from pressure by the removal of a segment of bone, as in the brain, it being encased in a canal, hanging by its attachments to the foramen magnum, and its spinal roots in a liquid bath. The removal of the spinous process, in order to reach the anterior body of the vertebra, causes a permanent impairment of the spine, and even if the segment is restored after the operation, the cord will have to be exposed by separating its sheath, and the advantages of removal of a clot of blood will be very hypothetical, and then, with the loss of the serum of the spinal canal, there will be no advantage to the patient.

In injuries to the lumbar vertebræ, however, there is an opportunity of doing good work and of restoring the sufferer to health and usefulness. This portion of the spine will not sway forward by the concussion of the fall, but will be dislocated, and with the dislocation there will be fractures. The injury is generally due to the falling of rock or other heavy bodies upon the back while stooping; especially is this frequent in the case of coalminers. During the last year there have been eight cases of broken backs at the Blossburg Hospital, all of which proved fatal, and in all

hospitals for injured miners there are many of these unfortunate sufferers. The falling rock bends the flexible spine, and when the fixed part of the spine is reached, the crushing weight tears the posterior ligaments and the vertebræ slip over the fixed pelvis. The result is paralysis from pressure upon the cord. In April, 1884, I was called to McIntyre to see a Swede, Andrew Myleen, who the day preceding had a half-ton of rock fall upon his back. When I saw him there was a perceptible offset between the fourth and the last lumbar vertebræ, with total paralysis below the fracture. I gave the unfortunate man ether, and, with the aid of four men, had strong extension made to his limbs, with his body fastened to the head of his bed, at the same time applying judicious pressure to his spine and abdomen. With strong extension the dislocated vertebræ were replaced with a loud snap. Immediately the patient awoke from a deep ether narcosis, with the remark, "It is better," and sank to sleep. In six weeks, under the care of Dr. Bullock, physician to the mines, with the use of the interrupted and constant current and massage, the use of the sphincter was regained, and he walked with crutches. He was afterwards brought to the Williamsport Hospital, a plaster-of-Paris jacket was placed on him, and he was discharged, but this failed to relieve him. again returned. This time a cast was made of his body, and upon it a jacket was formed of lumbermen's flannel and glue, which answered admirably. He went among his people and recovered rapidly. He has been for many years a prosperous and successful miner, and I take pleasure in presenting him to you this

The partial dislocations of the cervical vertebræ in children are easily reduced by extension,—that is, lifting by the head with the body pendent. In 1855, Dr. Norris, of Philadelphia, relieved a child of Professor Gibson, who had accidentally displaced the head on the atlas. The simple suspension allowed the head to rotate, with recovery. In other cases simple rest will result in recovery; but in injuries of the dorsal vertebræ there is slight possibility of recovery either by extension, position, or surgical treatment. Extension is not feasible. on account of the fixation of the ribs and sternum. with the interlocking of the spinous processes, and the fracture will always be of the bony vertebræ, not of the cartilaginous septa. The lumbar vertebræ, which do not have the bracing support of the ribs, can be extended under ether quite perceptibly and placed in apposition.

Here the cord, being encased in many fibrous coverings, if compressed, will not soften as it does in the fixed vertebræ, but with removal of pressure will regain its functions. A water-bed is indispensable for all cases of spinal injury. They are costly and short-lived, being made of rubber and liable to injury; even a pin-hole will render them useless. At the Wilkesbarre Hospital they improvised a cheap water-bed made of galvanized iron, with spigots for ingress and egress of water by a hose; this is covered with a sheet of rubber cloth. The cloth is fastened by cleats on the side of the rim of the box. It is very cheap and efficient, and can be placed on any ordinary bed. We found it convenient for the case of spinal fracture which I here report; but our subject is inexhaustible, and with the results noted would make this paper too long. It can be summarized by the statement that in most cases rest is the only remedial agent, and that, too, on a water-bed. In the few cases extension can reduce the dislocation, and rest will enable the spine to remedy the injury by plates of bone. With most of these recoveries, however, there will be deformity, generally of a stooping char-This rest on the bed must be followed by a fixed jacket placed on the body after extension, in order to place the weight of the body on the pelvis after the patient commences to walk.

THE THERAPEUTICS OF ELECTRICITY
IN RHEUMATISM, GOUT, AND
DISEASES OF THE LIVER
AND KIDNEYS.

BY A. D. ROCKWELL, A.M., M.D., NEW YORK.

RHEUMATISM.—There is perhaps no one disease for which electricity has been more frequently attempted, nor one in which its virtues have been more extravagantly proclaimed, than rheumatism. I may also add that, among those diseases in which electricity possesses a well-recognized and very positive value, there are few where it more frequently yields disappointing results than in this condition. The reason for this lies in the fact that a proper discrimination does not enter into the selection of cases.

Before electricity became legitimatized, as it were, in the profession, its charlatan element in some cases gained great *èclat* among the laity for their unusual success in treating rheumatism by electricity.

Every muscular pain was termed rheumatism, and in those cases of the true muscular variety

of the disease, so many of which recover in a few days, the remedy seemed to the uninstructed mind quite magical in its effects. In acute articular rheumatism, electricity in any form is of doubtful value. In any event it is very difficult to make satisfactory applications to the inflamed joints and sensitive muscles. It is an acute febrile disease, characterized by profound constitutional disturbance, while its pathology is admittedly obscure.

Whether we accept the lactic acid theory, the germ or the infective theory, or the malarial theory, it is probable that organic poisons introduced from without or produced within are the important causative factors of the disease, in its acute form especially. While general and local palliative treatment may give great comfort to the patient, and occasionally may prevent complications, it is yet doubtful whether an attack of acute rheumatism can be very much shortened by any method of treat-I have, however, seen unmistakable evidence of the benefit to be derived from the use of electricity after the decline of the acute symptoms, and the disappearance of the enlargements and excessive tenderness of the joints. In my own experience this point has been satisfactorily determined by observation in cases when in repeated previous attacks convalescence was more prolonged than after resort was had to treatment by the method of general faradization.

Subacute articular rheumatism is far more favorably affected by electrical methods of treatment than the acute form; but even in these cases it must be admitted that the remedy acts with a degree of capriciousness that is often very discouraging. There are some cases that will not be benefited at all by electricity. I have known a number of cases in which increased pain, heat, and redness were occasioned by any and every attempt in the use of this agent.

These unsatisfactory results must be attributed not so much to the disease itself as to the peculiar individual idiosyncrasies that occasionally assert themselves so vigorously under electrical treatment. There exists a class of cases of the subacute variety of rheumatism which has served an excellent purpose in fostering the credulity of those who make electricity almost a panacea in the treatment of rheumatic conditions. Under any circumstances, either with or without treatment, the duration of these cases is exceedingly short, in many instances not exceeding two or three days. Now, in an attack of this kind, if one is so fortunate as to see the case ab initio, and electricity is em-

ployed, to electricity is given the entire credit of the cure. I well remember a perfectly honest but ignorant so-called electrician, into the mysteries of whose practice I gleaned some insight a number of years ago. He believed electricity to be an unfailing remedy in rheumatism, and this belief was shared by a multitude of people influenced by his success in these transient subacute cases of rheumatism which came to him in large numbers and as soon as the first symptoms of pain manifested themselves.

But there is another not infrequent group of rheumatic cases of the subacute variety in which electricity serves a most excellent purpose, allaying irritability, lessening the heat and pain in the joints, and appreciably shortening the duration of the attacks.

It does more than this. From much experience I can confidently assert that by its use the severity of subsequent attacks will be greatly lessened, if the tendency to recurrent paroxysms is not entirely destroyed. I am well aware that these cases of subacute rheumatism. occurring in persons approaching middle life or beyond it, tend, in subsequent attacks, to lessen in severity sometimes, but careful observation in many cases enables one to discriminate between what is and what is not the result of the treatment administered. According to my own experience there is only one satisfactory method of electrical treatment in these cases, and that is the method of general faradization with the descending current.

Purely local applications, while perhaps not altogether useless, are by no means so efficient as the general method. I have time and time again, because of the labor entailed, and the objections of patients to disrobing, confined my efforts to applications to the joints alone, but always with results unsatisfactory when compared with the general method of treatment.

Muscular rheumatism is also in many cases obedient to some form of electricity in a very marked degree. We have here a condition affecting mainly the fibrous and muscular structures, associated with pain, and sometimes with spasms of the affected part. The exciting cause is most frequently exposure to draughts, and such exposure is especially apt to be followed by severe and persistent attacks, if associated with it there has been any strain of the fibro-muscular structure. It is unnecessary to enter into any detailed description of the symptoms of muscular rheumatism.

As a rule, although not in every case, rest greatly alleviates the pain, while movement of h

tl

b

p

w

V 91

I

Sŧ

P h

C) lı

fi

a: e

fá

ti a

k

SI

d

b

u

ť.

a t'

¥

ť.

jį

C

а

h

ŀ

а

r

t

t

r

F

ŀ

8

t

r

t

r

Ł

the affected muscles is attended by sudden spasmodic pain of an excruciating character. It hangs on, with varying degrees of persistency, from a few days to weeks and months, and in some of the more severe cases, involving the fibro-muscular structures, it has been known to occasion years of suffering. All these forms of electricity, galvanic, faradic, and static, are of value in the treatment of muscular rheumatism; but, taking the cases as we find them, I myself have not only found static electricity to be the most efficacious of all the electrical methods, but among those who have experience with the three forms in the treatment of the disease the same judgment, I find, prevails.

If a case of muscular rheumatism came to me in which the pain was of a neuralgic type and with considerable tenderness to pressure, and especially light pressure, I should choose either the galvanic or the faradic current of high tension, preferably the former. In a certain proportion of such cases it will be found that the treatment will almost immediately dissipate the tenderness and lessen the pain, as well as hasten recovery, while static electricity will, as a rule, afford no relief, but may even aggravate the pain. An exception must, however, be made in favor of the static induction current, which, with its infinitely rapid succession of sparks, becomes dynamic in character and allied in its effects to the faradic current of high tension. If, however, the opposite condition of things prevails, as is more frequently the case in chronic cases of muscular rheumatism, static electricity is capable of far greater relief than either of the other two forms. In these chronic cases there is often but little pain on pressure; indeed, pressure often affords re-The pain is dull and aching, and seemingly very deep-seated, even when in repose. I have, in fact, seen many cases when the pain became entirely subdued during more or less vigorous and protracted exercise, the excitation of the circulation and the heightened activity of the various excretory and secretory processes of the body seeming for the time being to take away every reminder of the disease. method to be adopted is the simple one of insulation and submitting the patient to the effects of the roller electrode over the affected parts.

It is by no means a pleasant method of procedure, but if continued for twenty minutes or half an hour, it is quite remarkable the relief that is afforded. Sometimes, but not generally, this relief remains permanent after a single application.

I have known of cases of lumbago, after suffering for weeks, to be completely and permanently relieved after a single stance of this kind.

Rheumatoid Arthritis.—There is one other manifestation of the rheumatic diathesis which should be referred to in this connection, notwithstanding the generally unfavorable prognosis attending its treatment. Reference is made to rheumatoid arthritis,—a chronic inflammatory condition of the joints,—associated with degenerative changes, and resulting in various degrees of deformity. Almost every joint in the body may become affected, and it is usually observed that in the joints of the extremities, especially those of the knee, elbow, wrist, and fingers, the effusion is greater and the deformity more pronounced than elsewhere. large proportion of cases the sufferers from rheumatic arthritis give a history of acute articular rheumatism, or, at least, of a mild form of chronic articular rheumatism, although in other cases no such history is given.

The pain and tenderness is often of the most excruciating character, and so continuous as to prevent sleep and render life altogether miserable. I have found electricity to be *palliative* in a marked degree in not a few of these cases, not only in the way of relieving pain, but in increasing mobility.

On theoretical grounds one might perhaps prefer the galvanic current in the treatment of this condition, but my own experience with a considerable number of cases is altogether in favor of the faradic current, and the higher its tension the greater appears to be its analgesic properties. For this reason the static induction current, the tension of which is so enormous, is often serviceable. In one case of rheumatoid arthritis that I recall the disease affected not only the extremities, but had extended to the sterno-clavicular articulation and to the spine. The pain down both arms was very severe, and, as the disease progressed, the patient found it more and more difficult to walk in an erect position, or to bend over without occasioning severe pain in the spine. Frequent and longcontinued applications of both the faradic and static induced currents of electricity were followed by the most marked and grateful relief in this case; and not only as regards pain, but in the ability to assume and retain a more erect In the consideration of the treatment of the chronic articular and muscular forms of rheumatism, the application of the faradic brush should be mentioned. A vigorous current, sufficient to produce intense redness of the skin, is sometimes followed by great relief.

Gout.—Gout is a disease which, in the majority of instances, is so thoroughly dependent

upon errors of food, drink, and exercise, and the influence of heredity, that its prevention and cure depends for the most part on the observance of strict hygienic methods.

n is on 1

diathea e

ODDOCE .

Orable In-

creace :

Dic 🛬

500m

ing in

TOTE

Id it BE

: (1)

T, TE

the co

here :

ilas:

facute

aild fe

reh na

of the:

0,0006.0

ther m

Mik

KT 3

in. Ir

: pes

that

e TE

de

W.

孛

'n

de de

12

×

n

It is within the experience of every physician that hereditary influences are alone sufficient in many instances to account for attacks of gout. The victim may be most abstemious in all his habits of eating and drinking and active in exercise, and yet suffer at intervals from the characteristic pain and swelling of the smaller joints, clearly indicating the lithic-acid diathesis. have seen several cases of this character in which the loss of nervous tone was such a prominent feature that the term "nervous gout" seemed entirely applicable. Electricity serves a useful purpose in such conditions. It is distinctly palliative, and a certain proportion of cases react to its effects in a most gratifying manner.

There is one phase of the subject to which more consideration should be given in the study of electricity in its relation to disease, and that is the remarkable variation in the susceptibility of different individuals to its effects. One can appreciate this fully, however, only after long and varied experience. To say that some persons were not born to be treated by electricity is a strong expression, but thoroughly true. The observation was made years ago, and proofs of its substantial accuracy accumulate year by year, without regard to the nature of the symptoms or the disease. There are, on the contrary, those whose tendencies and susceptibilities are quite in the opposite direction, and who respond most kindly to any form of judicious electrical treatment. One of the most interesting evidences of the truth of this statement occurred in the person of a patient who first consulted me nearly ten years ago, and who for many years subsequently I was enabled to keep under a general observation. When I first saw him he was a young man, aged twenty-six years, and at that time was suffering from a distinct gouty swelling of the metatarso-phalangeal articulation of the great toe and the large joint of the index-finger.

He gave a history of direct hereditary transmission through several generations, and, although both his father and grandfather had been high livers, and indulged in the free use of wines, he himself had been from childhood unusually abstemious in eating, had never touched liquor of any kind, and was an enthusiast along the line of athletic sports.

He belonged, however, to the true neurasthenic type that is now so familiar to every observing physician whether a specialist in neurology or not. This was by no means his first

attack. They came on at irregular intervals, sometimes one or two years intervening between the paroxysms, and then again only a few months. On each occasion the joints were exceedingly stiff, swollen, and painful, invariably keeping him from all active exercise for a month or six weeks. The results that followed the use of electricity on many different occasions in his case conclusively proved that he was one of those "born to be treated by electricity."

General faradization was always followed by a very marked alleviation of pain, and invariably shortened the attack. Repeatedly resorted to in various subsequent attacks, it has always proved immediately palliative, and has, in my opinion as well as that of the patient, permanently reduced their severity as well as frequency. Acute attacks of gout, however, depending upon errors of food and drink, combined with indolent habits, offer no special field for the beneficial effects of electricity. It is, indeed, doubtful whether it would prove of the slightest service in those every day cases of gout that are so familiar.

Taking into consideration the catalytic and absorptive power of the galvanic current, it has been believed that much could be accomplished through its use in dissipating the gouty concretions that form in the different parts of the body. Experience has, however, not been very satisfactory in this direction.

The deposits of urate of soda resist with great persistency all external and mechanical methods, and the few reports of success in these attempts have not been satisfactorily confirmed by wider experimentation. I have in past years treated many cases of this character, but I am bound to say that I have never yet seen a true calcareous deposit in the joints diminished in any appreciable degree by any form of electrical treatment. I have, however, known of actual damage being inflicted by a too confident and careless resort to the galvanic current. December, 1891, a gentleman called upon me, inquiring if electricity could do anything to relieve his hands and feet, stiff and crippled from repeated attacks of gout. That the urates had been deposited in large quantities was evidenced by the great deformity and unusual size of many of the joints, and especially those of the hands. The skin as it stretched over the concretions presented the characteristic bloodless and shining appearance, and looked as if under provocation it might readily give way. I told him that electricity could do nothing for Within a week he returned, saying that he had been assured by another that the galvanic current would certainly help him, and upon the assurance he submitted to two local applications of the current strong enough to occasion sharp burning and to redden the skin. The almost immediate result was an excoriation, which is likely to be permanent.

There is much truth in the statement that "he only has gout who will have it." Leaving heredity out of consideration, it is an easily preventable condition, and is brought about in the majority of cases by grossly unhygienic methods of living. Its prevention and cure, therefore, depend for the most part on a return to proper methods of living, both as regards eating and drinking and exercise; and only in so far as electricity can be made to produce effects similar in kind to that obtained through muscular exercise is it of any therapeutic value. In those cases, therefore, where from any cause adequate active exercise is not practicable, the mechanical effects of the faradic current after the method of general faradization is certainly indicated. and its tendency is to do good.

Hyperæmia of the Liver.—Acute hyperæmia of the liver is not usually of very serious import. Through rest, attention to diet, and a free operation of the bowels, the attack can, as a rule, be cut short and complete recovery assured. Repeated acute attacks of congestion, however, may finally result in a condition of passive hyperæmia, which, if not relieved, and the normal functional tone of the liver restored, will, in its turn, degenerate into an atrophic or cirrhotic state. In the greater number of cases of chronic congestion of the liver that have come under my observation there have existed marked functional disturbances elsewhere. A furred tongue is generally present, and nausea, and even occasional attacks of vomiting, add to the general discomfort. The acrid bile secreted sometimes occasions a diarrhœa of a peculiarly griping and distressing character. Headache is a very common symptom; but the condition which is, perhaps, more constantly present than any other, and which is the source of most distress, is the profound depression of spirits proverbially associated with any form of liver inefficiency. The active congestion of the liver dependent upon overeating and drinking in persons of sedentary habits must be met and overcome by properlydirected dieting and adequate exercise. Electricity is in this class of little value so long as there exists a disregard of hygienic methods of living, although the mechanical effects of the faradic current may in some degree act as a substitute for active exercise. When, however, active hepatic congestion follows, and is caused by,

suppression of the menses, there is hardly a remedy that acts with greater promptness and efficiency than electricity. A case like the following has in my own experience been not infrequently observed: A woman, generally of plethoric habit and nearing the climacteric period, seeks advice and relief for a feeling of oppression and tenderness over the region of the liver and stomach. The pain is generally slight, but the sense of fulness complained of is so constant as to be terribly wearing.

Many other symptoms, such as headache, drowsiness, depression of spirits, and constipation, are present, and in many cases the irregularity of the heart's action is of the most pronounced character. The urine is almost invariably high colored, and in other ways changed in character. The patient will tell you that the menstruation ceased suddenly, or failed to appear at the usual time, some months before. The objective symptoms elicited by percussion may or may not be pronounced, but in some cases, and in one especially of recent date, that I recall, the liver had attained a considerable size. In this case electricity wrought a speedy and complete recovery, not so much by the general methods of application, which is often so effective in the relief of local congestions, but by applications directed to the uterus itself, thus re-establishing the suppressed menstrual function. First a bipolar vaginal electrode was introduced, and the faradic current of quantity applied. This proving ineffectual, the intrauterine bipolar electrode was used, and, after a few séances, was followed by a menstrual flow of the most profuse character. The relief thus afforded was very great. tenderness and fulness in the right side ceased to cause annoyance until the time for menstruation again came round, when, with the nonappearance of the courses, she again began to A repetition of the same method of treatment again resulted in bringing on the courses, less profuse than before, but attended with the same grateful relief. The next menstruation came on without forcing measures. and the case passed from under my observation apparently cured.

Congestion of the liver due to mechanical causes are manifestly beyond the range of electrical treatment. Indeed, when there exists an impediment to the circulation of the blood from the liver to the heart, due to dilatation of the latter organ, or when the congestion is caused by disease of the lungs obstructing the circulation in the pulmonary arteries, all remedies, as a rule, prove of little permanent avail. There is one cause, however, of chronic or

passive hyperæmia of the liver which is often exceedingly persistent, but yet at the same time susceptible of relief not only through medication and hygienic methods, but especially by electrization.

1

No.

le ai

IJij.

10

100

let:

Torse

700

OI N

20

COST

r II

ir n

3 2 Ear

a n

1.2

ů.

DE:

26

n i

1

100

IJ.

I

Ė

ja

Ľ.

Ü

1

12

17

T.

b

After exhausting fevers of the typho-malarial type, puerperal fever, and the acute exanthemata, there remains an impaired condition of the general system, of which the most prominent manifestation is a weak and irritable heart that either causes or keeps up a chronic state of engorgement of the liver. General faradization is in these cases of undoubted service. With one pole at the cilio-spinal centre and the other at the feet or the buttocks, or the solar plexus, a powerful induced current of tension can be applied, sufficient to affect the sympathetic system of nerves and the pneumogastric, and through these the heart itself, as well as the arterial ramifications.

Diseases of the spleen, especially leucocythæmia, frequently result in enlargement of the liver, but associated at first with no structural change other than congestion. The anatomical relations of these two organs are so intimate as to readily occasion complications. The splenic and the portal veins open into each other, and morbific influences are easily transmitted from the liver to the spleen, and vice versa. In consideration, therefore, of the fact that out of ninety-two cases of leucocythæmia collected by Ehrlich the liver was found to be diseased in fifty-four cases, treatment directed to the spleen alone may benefit its fellow.

It is well understood that in enlargement of the spleen, associated with an excess of white corpuscles, it is desirable to resort to any method that offers a chance of reducing the size of the tumor. In doing this we aid in expelling the retained leucocytes and in directly stimulating its normal function. Gowers speaks of a case of splenic anæmia where no remedies improved the blood stasis until the galvanic current was used. Under its influence the red corpuscles at once began to increase. Botkin\* has spoken of the great therapeutic importance of electricity in splenic tumors. He considers the enlargement of the spleen to depend to a certain extent upon a diminution of its contractility, in consequence of which a retention of its contents takes place. Since the muscular fibres of the spleen can be excited to a greater activity by the electrical current, he thinks that one of the injurious consequences of the swelling of this organ may be diminished,—i.e., the increased stagnation According to his statement, applications of the induction current to the spleen caused the organ to grow smaller in all its dimensions, and with this diminution its consistency became tougher. After each electrization the number of red corpuscles increased, while the general condition—the appearance and complexion of the patient—decidedly improved. Simultaneously with the diminution of the splenic tumor under the action of the current, the liver clearly increased in size. The latter diminished again as soon as the spleen began to increase in size after the cessation of the electric current.

Although continued faradization always produced a decrease in the volume of the spleen, as well as of the lymphatic glands, yet it clearly lost little by little in activity, for the most striking and beautiful results were always obtained in the first sitting. It is fair to say that Dr. Elias, of Breslau, who treated a leucæmic spleen in twelve sittings according to Botkin's method, convinced himself that the apparent diminution of the spleen and enlargement of the liver depended only upon a strong contraction of the abdominal muscles, which pressed the still movable splenic tumor against the yielding diaphragm.

My experience in the electrical treatment of splenic diseases, associated with a congested and enlarged liver, is limited to one case in which electrical treatment proved to be of decided value. The patient was a man, aged thirty-five years, who, while mining in the far West, had been for a long time exposed to malarial influences. He had suffered from several severe attacks of intermittent fever, which greatly reduced his strength. When he came under my observation both the spleen and the liver were found to be distinctly enlarged. Anæmia was present in a marked degree, and in addition to the very pronounced pallor which involved both the skin and mucous membrane, the respiration was decidedly interfered with, especially when the recumbent position was assumed. I regarded the case as one of leucocythæmia, especially as, in addition to the characteristic symptoms above noted, there

of blood and the destruction of the red corpuscles. From his previous experience he thinks that these indications may be fulfilled by faradization of the spleen, not only in chronic but also in the acute splenic tumors of typhoid recurrent and intermittent fever. Proceeding on these grounds, he treated several cases of leucæmic tumors of the spleen, involving the function of the liver, with benefit to both organs.

<sup>\* &</sup>quot;Ziemssen," vol. viii. p. 427.

existed also a very decided hemorrhagic tendency, which on several occasions had greatly reduced him. Unfortunately, no examination of the blood was made, and this robs the case of the interest of absolute certainty. General faradization was first attempted in this case, applications being made every day for a month, and especial attention was given to the localization of the current over the liver and spleen. a few applications were given before the patient observed some improvement in his general strength and the character of his respiration. but at the end of the month of treatment there was no observable diminution in the size of the enlarged organs. I then determined to supplement the more general method of treatment by the localized use of the static induction current of electricity, which, through its enormous tension, possesses great influence over muscular contractions. The patient was also treated by insulation and by sparks drawn from the affected sides, with the result of greatly accelerating the man's progress towards recovery. He improved in every respect, and after some two months of treatment he seemed to be almost as well as ever.

Cirrhosis of the Liver.—The most that can be said of electricity in the treatment of cirrhosis of the liver is, that it will often relieve temporarily the pain that attends it, and in other ways modify the various associated symptoms. Atrophy of muscular, and even nerve-tissue we know to be amenable in many instances to the mechanical and nutritive effects of electrical applications; but when the secreting cells of the liver atrophy because of the compression due to excessive overgrowth of connective tissue, all efforts to stop the progress of the disease avail but little. If, however, the patient will abandon his habits of intemperance, if such exist, confine himself to an unstimulating diet, take exercise to the extent of his ability, and submit to proper electrical treatment, it has been demonstrated that life can be prolonged and rendered less burdensome. Among a number of cases of cirrhosis that have come under my observation, I can point to several that have been relieved of some of their symptoms by this method of treatment, and to one especially when life was undoubtedly prolonged for a considerable period. General faradization daily employed, together with applications to the point of endurance directly through the diseased organ, not only in great measure relieved the dull pain in the neighborhood of the liver, but greatly lessened, and for several months kept in subjection, the ascites and ædematous condition of the legs that had for

two months been prominent and distressing symptoms. These results seemed in part to be brought about by the action of the current upon the kidneys, which were excited to a greatly increased activity of excretion.

Jaundice.—In the consideration of this condition it should always be borne in mind that it is more a symptom of disease than a disease in itself. It results from various maladies, both curable and incurable, and as a rule our remedies should be directed towards the relief of the causative disease. The list of obstructive or mechanical causes of jaundice is a long one, and it would be futile in the vast majority of cases to expect any relief from electricity. It is entirely possible that in cases of spasmodic stricture, or where the obstruction is due to gallstones, or inspissated bile, that the galvanic and faradic currents respectively might through sedative and mechanical effects result in more or less benefit. It is, however, in some of the non-mechanical cases of jaundice that electricity exerts whatever beneficial influence it possesses in the relief of this condition. these non-mechanical causes of jaundice, there are two in which electricity may prove of direct and positive service. First, those cases where the normal metamorphoses of the bile is interfered with through deranged or impaired innervation; second, where the same effect is produced through habitual and protracted constipation.

Several methods have been recommended to determine the differential diagnosis between jaundice due to obstruction of the bile-duct and those cases that are due to some one of the many non-mechanical causes, one of which is as to the presence or absence of bile acids in the urine. The test more generally accepted as reliable, however, refers to the presence or absence of bile in the stools. When the jaundice is due to non-mechanical causes, bile can, as a rule, be detected in the passages, while in the obstructive cases the stools have the characteristic light or clay color. In jaundice due to obstruction, the discoloration occurs far more suddenly than when the cause is referable to interrupted metamorphoses of the bile.

To this there is one interesting exception, of which a number of examples have fallen under my personal observation. When the discoloration results from nervous causes, such as fright, grief, anger, or other emotional disturbances, it is apt to make its appearance quite as suddenly as when there exists actual obstruction of the bile ducts. If, in case of obstruction by gall-stones, it is thought to make use of electricity, the faradic current is the form that

should be selected, and simple local applications are all that are necessary. Currents of great strength can in this way be used, and with the electrodes properly placed it is entirely possible that muscular contractions of sufficient force might be produced to empty the distended duct. In cases of spasmodic stricture, localized applications of the galvanic current of a strength up to easy endurance might be tried. In regard to that class of cases brought about by various nervous causes, to which allusion has been made, a considerable experience teaches me that electricity may prove of the greatest service.

2

73

3

; :

r

ē

7

In these cases there is almost invariably decided physical as well as mental depression. All the processes of secretion and excretion are liable to be sluggishly performed, and yet, associated with these functional derangements, there may exist very decided nervous irritability. In such cases no merely local methods of application will serve our purpose, but under thorough general faradization I have, in many instances, witnessed changes for the better almost immediately. With the patient stripped to the waist, and with his feet upon a copper plate connected, preferably, with the negative pole, the entire surface of the body should be subjected to the influence of the positive pole. Short applications are not, as a rule, satisfactory. If the patient is not unusually sensitive to the influence of the current, the applications should be continued for at least twenty minutes, and often for half or even three-quarters of an hour. I have in this way seen cases of jaundice of long continuance not due to obstruction, and the result of non-nervous, as well as nervous. causes, yield to this method of treatment in a comparatively short space of time.

Diabetes Mellitus.—As jaundice is not, strictly speaking, a disease of the liver, so diabetes is not strictly a disease of the kidney, yet its predominating feature is such an overwhelming disturbance of the function of this organ that it has been considered desirable to treat of it in this connection. Moreover, the organic changes of the kidney that occur in the course of this disease are sometimes of the most pronounced character. Rokitansky, in his wellknown series of necropsies, found that in the majority of cases there was well-marked disease present. Intense hyperæmia almost uniformly prevailed, and in some cases the organ was found to be much harder than usual, associated with vascular changes and diseased epithelium.

There are, however, strong grounds for believing that diabetes may be an essentially nervous disease. One is because of the wellestablished fact that injuries or diseases of the brain sometimes occasion this disease. More frequent causes of diabetes are emotional disturbances, anxiety, grief, worry, all and each of which, where prolonged and intense, may directly act as exciting causes. Another argument in favor of the nervous origin of the disease is, the fact that in not a few instances remedies directed alone to the central nervous system have very favorably influenced its course. In a considerable number of diabetic cases that have fallen under my observation, I cannot, indeed, refer to any that have completely recovered, or who have been so permanently improved in all their symptoms that no relapse ever occurred.

In common with others, however, who have had experience in the management of diabetes, I have seen very considerable improvement in all the symptoms follow known and accepted methods of treatment, hygienic and otherwise. It is, moreover, my opinion, based upon considerable experience, that if, in addition to dietetic, hygienic, and medicinal treatment, we include electricity, results will be obtained in a certain proportion of cases that would be impossible without it. Both galvanization of the brain, preferably by the method of central galvanization, and general faradization are the methods that have in my hands sometimes aided in unmistakably modifying the severity of the symptoms for which relief is sought. I fully appreciate the fact that it is exceedingly difficult, if not impossible, to determine the exact measure of benefit derived from any special method of treatment when it is only one of a number of others that are simultaneously in use.

It has been my aim, therefore, in the treatment of many different conditions, and so far as it could be done without sacrificing the best interests of the patient, to test both the relative and absolute therapeutic value of electricity; and in a case that Dr. Chas. A. Dana once saw with me in consultation, I was enabled to very distinctly determine the benefit that electricity was capable of giving. patient, a lady, somewhat beyond middle life, was suffering not only from diabetes but also from locomotor ataxia. In regard to the latter disease. I was at first somewhat in doubt as to whether it was a case of actual sclerosis of the cord or one of those cases of which I had met a number where the symptoms very closely simulated true locomotor ataxia, but without structural disease of the cord. A careful and prolonged examination convinced me that the disease was organic and not functional, and with this conclusion Dr. Dana coincided, There was the characteristic inco-ordination of movement, cutaneous anæsthesia of the fingers and toes, sudden and shifting pains, and the absence of the patellar reflex. The patient was quite helpless, and could walk only with assistance. The flow of urine was not excessive, although decidedly greater than normal, but sugar was found in large quantities and on many different occasions.

This patient was under observation for many months, and I had abundant opportunity to test and contrast varied methods of treatment. She improved greatly in her locomotion, so that she was enabled to walk easily without assistance, and this improvement I attributed in great measure to the adoption of the suspension treatment, to which she was persistently subjected. Under diet, hygienic methods, internal medication, especially the bromide of arsenic, and electricity, the urine cleared up in great measure, and for a long time showed absolutely no evidences of sugar. Now, the reason why I believed that electricity greatly aided in affording relief to this patient was this: She came to me in October, 1890, and was immediately put upon strict diet, medication, and electricity. Within a month she had decidedly improved. She walked better, slept better, had less anæsthesia and pain, while the flow of urine and the amount of sugar found had very greatly decreased. I now suspended altogether the electrical treatment, and for about a month continued as before with the other methods. The patient not only failed to improve further, but became decidedly worse in every symptom referable to her diabetic condition. She began to pass urine more freely, and an examination showed a decided increase in the amount of sugar discharged. Her sleep became more disturbed, and a certain itchy and eruptive condition of the skin, from which she had previously suffered, but which had entirely disappeared under treatment, returned in full force.

Again the electrical treatment was resorted to, and again improvement manifested itself in short order. The itching ceased immediately, and normal sleep was restored at once, but it was not until after several urinary analyses that the amount of sugar was found to have sensibly decreased. On one other occasion during the treatment, which lasted through the entire winter, the electricity was again intermitted for a few days, with the result of some return of itching and a slight skin eruption. Never after this, while under treatment, would the patient consent to any cessation of the electrical applications. After the patient had left for her home in another state, she retained for

months the improvement that resulted from the varied treatment administered, but subsequently she was seized with an attack of the grippe, followed by pneumonia, from the effects of which she succumbed.

The electrical treatment that I administered in this case was general faradization, alternated with central galvanization. General faradization I administered thoroughly from the head to the feet, and with a strength of current up to the point of easy endurance. By using electrodes of large size, and accurately adjusted to the surface of the head, I was enabled to use the galvanic current as high as twenty milliampères in strength. More than this occasioned pain, and she once complained of sudden nausea when the strength had been raised to twenty-eight milliampères.

There was not in this case, to my mind, the slightest doubt but what electricity had been a most important aid in the relief of the symptoms so happily obtained. It would have been both interesting and valuable to have tested the comparative value of the two methodscentral galvanization and general faradization —in the treatment of this case, and I regret that this was not done. I believe, however, that both methods were of value, the action of the galvanic current on the central nervous system supplementing the mechanical and tonic influence of general faradization on the system at large. It is well understood how exceedingly important well-regulated physical exercise is to the diabetic; but this patient, on account of her other infirmity, was unable to walk to any sufficient extent, and for pecuniary reasons was unable to ride regularly. General faradization acted as a substitute for these. It gave passive exercise to all the deeper lying as well as superficial tissues, and, through the contractions it excited in both voluntary and involuntary muscles, raised the temperature and increased the process of oxidation.

Polyuria.—For convenience sake only do we include polyuria, or diabetes insipidus, under the head of diseases of the kidney, since, speaking strictly, it is no more a disease of this organ than is diabetes mellitus. As a rule, post-mortem examinations reveal no changes in the organ, excepting increased vascularity, although in some cases that have been exceptionally chronic in their course, structural changes have been observed. It seems reasonably evident, from the results of direct experiment, that polyuria, with its various subdivisions, should be classed among the neuroses.

applications. After the patient had left for | To arrive at correct conclusions as regards her home in another state, she retained for | the efficacy of electricity, or any other method

of treatment in polyuria, we must be sure of our diagnosis, and I am impelled to lay especial stress upon this point, because it is not very unusual for an excessive and more or less prolonged discharge of urine having a low specific gravity to be mistaken for polyuria. In hysteria and kindred conditions, the flow of urine is often excessive, although the special nervous symptoms associated with them render the differential diagnosis not very difficult. Disorders of the metabolic function of the liver are also not infrequently accompanied by a free and prolonged discharge of urine that have resulted in errors of diagnosis.

If, as is usually the case, it is impossible to assign a special cause in the production of polyuria, our efforts must be in the direction of supporting the general health so as to counterbalance, so far as possible, the enormous drain upon the system. In connection with a nourishing diet and tonics of strychnine and iron, the general application of the faradic current and of the galvanic current, used centrally and locally, are useful methods. some instances polyuria has decided nervous affinities, and in these cases electricity performs a special function. I have known it to relieve nervousness bordering on hysteria in a case of polyuria that had resisted valerian and other antispasmodic remedies, and to finally aid, if it was not the main factor, in its complete recovery. Notwithstanding, however, the occasional good results that follow this and other methods, the treatment of polyuria is in general by no means satisfactory.

Hyperamia of the Kidney.—The writer once reported a case of Bright's disease, the symptoms of which rapidly improved under electrical treatment, until recovery finally took place. In support of the diagnosis of Bright's disease, both albumin and hyaline tube-casts were found, together with a diminished quantity of urine, but subsequent experience in the treatment of the disease failed to justify the expectations raised by this one case. Evidently the diagnosis had been erroneous, and, looking back from the stand-point of a greater experience with cases somewhat similar, I am of the opinion that the condition supposed to be Bright's disease was simply one of hyperæmia. While such mistakes in diagnosis ought not, perhaps, to be made, yet it is not remarkable that the two diseases should occasionally be confounded.

Hyperæmia of the kidney, active or passive, like the more serious disease for which it is sometimes mistaken, is characterized by the appearance of albumin in the urine, and more rarely by the presence of hyaline casts in very

small quantity. The diagnostic points between hyperæmia of the kidney and Bright's disease is, therefore, not always clear at first sight. In hyperæmia, to be sure, the urine is almost invariably small in quantity, but in Bright's disease this is also often the case. A generally distinctive feature lies in the fact that in congestive conditions the urine easily deposits blood, renal epithelium, or tube-casts, is highcolored, and of natural specific gravity. Active congestion of the kidney is best treated by the ordinary method of dry cupping, warm baths, e\*c., while any inducing cause, such as heartdisease or pulmonary disease, should receive their appropriate treatment. Active hyperæmia, as a rule, rapidly subsides, but the passive form is more persistent and tends to recur. General faradization, properly and persistently applied, is a remedy of no little value in the treatment of this condition, and under its use it is not uncommon to witness not only temporary relief of pain and an increase in the flow of urine, but permanently curative effects.

THE THERAPEUTIC USES OF PHENO-COLL, WITH SPECIAL REFERENCE TO ITS EMPLOYMENT IN MALARIA.

READ BEFORE THE SECTION ON THERAPEUTICS OF THE FIRST PAN-AMERICAN MEDICAL CONGRESS, WASHINGTON, D. C., SEPTEMBER 7, 1893.

BY DAVID CERNA, M.D., PH.D.,

Demonstrator of Physiology and Lecturer on the History of Medicine in the Medical Department of the University of Texas;
formerly Demonstrator and Lecturer on Experimental
Therapeutics in the University of Pennsylvania.

HAVE already, with the collaboration of Dr. William S. Carter,\* studied the physiological actions of this new product,-phenocoll. The drug is closely related to phenacetin. It is obtained by the interaction of phenetidin (para-amido-phenotol) and glycocoll (amidoacetic acid). The hydrochloride or hydrochlorate of phenocoll—the salt most generally employed in practical medicine—occurs in the form of a white crystalline powder, soluble in water at a temperature of 62° F. (16.6° C.) in the proportion of one to sixteen parts. readily soluble in hot water and in alcohol, its ready solubility being due, it is claimed, to the presence of the amide (NH<sub>2</sub>) group. The drug is barely dissolved by benzol, chloroform, or The water compound melts at 203° F. (95° C.), but the anhydrous base requires a temperature of 212.9° F. (100.5° C.). The

<sup>\*</sup> Notes on New Remedies, September, 1892.

salt, according to chemical analysis, may be represented by the following formula:

$$C_{a}H_{a}<_{NH,COCH,NH,HCl.}^{OC,H}$$

From a solution of the hydrochloride the alkalies and the alkaline carbonates precipitate the pure base.

According to Ott \* phenocoll causes in frogs first a general paralysis, followed by loss of sensibility, and, finally, of motility, with diastolic arrest of the heart. Both sensation and motion are destroyed, owing to an action of the drug upon the spinal cord. In rabbits it causes quietude, cyanosis of the ear, and weakness of the posterior extremities.

Carter and the writer † found from the results of experimental work that phenocoll, in ordinary amounts, has no effect practically upon the circulation; that large doses diminish the blood-pressure by influencing the heart; that it reduces the pulse primarily by stimulating the cardio-inhibitory centres, followed by increase in rate, due to paralysis of said centres; that the final diminution in cardiac beat is dependent on an action upon the heart. On the blood itself the agent exercises no influence. It was also observed that phenocoll causes, in septic fever, a very decided fall of the temperature, the fall occurring the first hour after the administration of the drug by the stomach. The reduction of the fever is the result of an enormous diminution of heat production without any alteration of heat distribution. Finally, the power of phenocoll to reduce abnormal high temperatures is very decided, and it does this in therapeutic doses, without depressing the circulation.

Phenocoll hydrochloride has already been tried clinically, with alleged success. It has been found useful as an antipyretic, and also in the treatment of neuralgia, influenza, and rheumatism. I need only refer to the favorable reports published already by various observers, among whom may be mentioned Hertel,1 Jacobi, S Herzog, || Cohnheim, T Albertoni,\*\* Bradenburg, †† and others. Quite recently Klick ! has called attention to the value of phenocoll in measles; and Beck, §§ writing on the antiseptic properties of the drug, says that "it surpasses iodoform, because it dissolves easily, is odorless, does not produce eczema, is not contraindicated in kidney-disease, and, on account of its non-poisonous effects, it can be applied to very extended surfaces."

The excellency of phenocoll in malarial diseases, as first pointed out, I believe, by Albertoni, assisted by Novi, Prate, and Venturini. has been confirmed later by the observations of Crescimano, || Dall' Olio, ¶¶ Cucco, \*\*\* and Cervello. †††

Albertoni reported successful results with the use of phenocoll in twenty-two cases out of twenty-nine of paludal disease. Cucco, according to his preliminary report, treated eighty-four cases of malaria with the same drug. Brilliant results were obtained in fiftytwo, in twenty-one the value of the medicament was uncertain, and in four cases it failed to do any good. The other seven cases were not observed sufficiently long to give any accurate information, though in general the results pointed to the usefulness of the drug.

It may properly be said, perhaps, that in the whole and almost infinite range of therapeutic science, the nearest approach to a specific treatment of disease is that of mercurials and iodides in the different forms of syphilis, and of quinine in the various types of malaria.

Bacteriology, which has so revolutionized medical science, is constantly increasing our knowledge in regard to the etiological influences of micro-organisms. It seems that the time is not far off when we shall be able, with certainty, to ascribe every ill that flesh is heir to to a specific germ. And then, as is the case at present in the treatment of certain diseases, regardless of symptomatology (leaving to hygiene the consideration of how to prevent infection and how to build up the system so as to avoid the noxious actions of micro-organisms), the most important desideratum of rational therapeutics will be how to act upon causative germs or their by-products.

Of all the febrile diseases of microbic origin, there is no one that is better understood, perhaps, than malaria in its different manifesta-The cause of the malady has been traced, first, according to the observations of Klebs and Tomassi-Crudeli, to a specific germ, the Plasmodium malaria, so called, and found especially in the blood of patients as well as in the air and soil of malarial districts. That the

<sup>\* &</sup>quot;The Modern Antipyretics," 1892.

<sup>†</sup> Loc. cit.

<sup>†</sup> Deutsche Med. Wochenschrift, April 9, 1891.

Notes on New Remedies, February, 1892. \*\* Ibid.

<sup>¶</sup> Ibid. | Ibid.

<sup>‡‡</sup> Ibid, June, 1893. †† Ibid. & New York Medical Journal, April 22, 1893.

<sup>||</sup> Berlin correspondent in Notes on New Remedies, May, 1893.

<sup>¶¶</sup> Gazet. degli Ospitali, January 14, 1893.

<sup>\*\*\*</sup> Therap. Monatshefte, No. 4, 1893. ††† Archiv. di Farmacol. e Terapeutica, 1893.

paludal disorder is principally due to organisms has more recently been demonstrated by the able researches of Laveran, Marchiafava and Celli, Osler and Councilman, Carter, James, and others. At least three different well-marked forms of such microbes have been described. In addition to these and probably other forms, Nepveu\* has found five new organisms in the blood of malarial patients. Again, the relationship between the cyclical development of the parasites and the periodical accesses of the fever has been clearly shown by the investigations of Colgi.† It is affirmed that the exacerbations of the fever are closely associated with the different varieties of the plasmodium, and that, therefore, a satisfactory explanation can be given of the various types of malaria, such as the quotidian, the tertian, the quartan, and so forth. Thus it is believed that the tertian depends upon the presence in the blood of a distinct variety of parasite, the development of which occupies two days.

Almost from time immemorial quinine has been known to destroy marsh fevers, the drug acting in such cases evidently as a specific. The empirical knowledge of yesterday has been strengthened by the biological science of to-day. Indeed, it is now known that the alkaloid of cinchona acts not only as an antipyretic, but that, as an antiperiodic, it exercises a direct influence on the plasmodia.

It will be remembered that as far back as 1765 Pringle called attention to the fact that cinchona bark, in powder or decoction, has the power to arrest or prevent putrefaction in flesh, a discovery which has been confirmed by the researches of Hallier † and other observers, and especially by the studies of Binz. § Councilman has shown that quinine does act on the plasmodia of the paludal disorder, and, again, Romanowsky || has observed the regressive changes in the malarial parasites brought about by the administration of quinine. Laveran ¶ had already stated that the efficacy of quinine in paludal fever depends upon a specific destructive action of the drug upon the hæmatozoa. But I shall not go any farther into this matter, so interesting from a scientific point of view. I may be allowed to add, however, that there are typical cases of malaria which resist I fear I have digressed too much from my present theme. Returning, therefore, to the subject proper, I may state that my chief object in preparing this brief article is to record a few cases of malarial intoxication in which excellent results were obtained from the administration of the new agent under study. My short experience appears to corroborate in the main the observations of Albertoni, Crescimano, Dall' Olio, Cucco, and Cervello.

In a recent visit to a malarial district I had opportunity to make a number of observations in the treatment of paludal fever with phenocoll. A few of these cases had already been treated with quinine and arsenic, with little, if any, success; and it is worthy of note that in many of the cases that resisted the action of quinine and arsenic, the new remedy, phenocoll, gave excellent results.

With little or no time to make a minute microscopic examination of the blood of patients suffering from malarial symptoms, I simply followed the method advised by Laveran. †† The blood was obtained by puncturing a finger, thoroughly washed and cleansed previously, by means of a needle sterilized in the flame of a lamp. The blood appearing at the puncture was received upon a cover-glass, and distributed in a thin layer by means of a second cover-glass placed upon the first. examination was made by daylight, during or soon after the malarial accesses. In this way the spherical bodies, the crescentic ones, and sometimes the flagella could be observed. This is all that was done, which was found to be sufficient for the purpose of diagnosis and further observation. I may state, however, that I was not always successful in discovering the parasites.

In detailing some of the most characteristic cases, I will say nothing, purposely, in regard to other matters, confining myself to the description of the medicinal treatment. I may say, in passing, that all the patients under my

the action of quinine. In corroboration of this, Councilman found that neither quinine nor arsenic exercises any action whatever upon the crescentic organisms. This phenomenon has not been fully explained, although Wood \*\* suggests that "it is indeed not altogether certain that these (the organisms) represent one of the life-stages of the segmenting organism and have etiological connections with malarial fever."

<sup>\*</sup> Marseille Médical, October 15, 1891.

<sup>†</sup> Zeitsch. f. Hyg. u. Infect-krankh., Bd. x. p. 158, 1891.

<sup>‡ &</sup>quot;Das Cholera Contagium." Leipsic, 1867.

<sup>&</sup>amp; Virchow's Archiv, Bd. xlvi. p. 68, 1869.

<sup>||</sup> St. Petersburg Med. Wochenschrift, August 24-31, 1891.

T In Midarina Madarna Fehruary 10-26 1201

<sup>\*\* &</sup>quot;Therapeutics: Its Principles and Practice," edition of 1891.

<sup>++</sup> In Semaine Midicale. December 1800

care were advised to follow, as strictly as possible, hygienic measures; at the same time a liberal diet, such as milk, eggs, meats, farinaceous articles of food, broths, toast, etc., was, with a few exceptions, allowed. This latter concession was an agreeable surprise to the majority of my patients, who, I was assured, had been starved to death almost under the care of regular physicians!

Permit me, then, to describe the cases that follow:

CASE I.—Quotidian Type.—J. M. D., schoolboy, aged fifteen years. On June 28 had diarrhœa and vomiting, followed by intense fever. When first seen had already suffered from six well-marked accesses characterized by cold extremities, chills and elevation of the bodily temperature. No appetite; coated tongue; fetid diarrhœic stools to the number of four or five a day; tympanitis; both liver and spleen enlarged. Rectal temperature, 39.2° C. Blood showed germs.

July 4.—Gave some calomel and subnitrate of bismuth to insure intestinal antisepsis, and then ordered I gramme of the hydrochloride of phenocoll, in water, in three doses, one hour apart.

July 5.—Had only two stools in the day, not so fetid; all other symptoms less marked. Rectal temperature, 38.5° C. Tongue improved in appearance; no more vomiting. Ordered the same dose of phenocoll.

July 6.—Passages almost normal, two in the day; no tympanitis; tongue much less coated; better appetite. Rectal temperature, 37.8° C. Still a few plasmodia in blood. Gave r gramme more of phenocoll.

July 7.—Symptoms of digestive tract much better; no vomiting, no diarrhœa, and no tympanitis; appetite greatly improved; tongue almost clean; no chills or cold extremities; had one passage. Rectal temperature, 37.2° C. Blood was not examined. I gramme of phenocoll, as before, was ordered.

July 8.—General condition very good; patient quite bright; all symptoms of digestive tract abated; size of liver and spleen much diminished; appetite very good; tongue quite clear; patient believes himself cured. No plasmodia in blood. Rectal temperature, 37.2° C. Ordered another dose of phenocoll.

July 9.—Apparently no trace of the disease. Blood showed no parasites. Patient somewhat weak, but appetite almost voracious; liver and spleen practically of normal size; tongue perfectly clean. Rectal temperature, 37.1° C. Drug was suspended.

July 11.—No return of fever accesses observed.

July 13.—Patient had a slight feverish reaction, occurring at the usual hour. Thermometer marked, at the rectum, the figure 38.1° C. A few plasmodia observed in blood. Administered phenocoll during the fever, and in the course of an hour and a half the temperature was almost normal. Next day examined blood, but could see no parasites. Recovery was final. I saw patient July 18, and he was then enjoying the best of health. He had taken in all 6 grammes (90 grains) of the drug.

CASE II.—Quotidian Type.—M.V. N., female, eighteen months old. Had been ill for about two weeks; liver somewhat enlarged, but spleen markedly so; frequent vomiting, but diarrhoea slight; tympanitis marked; tongue quite coated; child extremely anæmic. Rectal temperature, 40.5° C. Blood was not examined. Access of fever occurred at night, preceded by cold extremities and followed by profuse sweating; loss of appetite.

July 1.—Gave her subnitrate of bismuth and ordered 5 grains of phenocoll in water, in divided doses.

July 2.—Had five black stools, but the rectal temperature was only 38.7° C. Ordered calomel and another dose of phenocoll of 5 grains, to be administered in the same manner as the day before.

July 3.—Infant somewhat better. Two stools, still diarrhoeic; tongue improved; tympanitis much less marked; liver and spleen still enlarged, the latter apparently quite sensitive. Rectal temperature, 37.5° C.; sweated very little. Ordered a third dose of 3 grains of phenocoll.

July 4.—Tympanitis almost gone; had one well-formed stool; tongue comparatively clean; hepatic area of dulness diminished; splenic dulness about the same; appetite better. Rectal temperature, 37.2° C.; no sweating. Suspended medicament.

July 5.—Little patient continued to improve; no more fever; tympanitis and diarrheea have disappeared; tongue clean; appetite better. Child much brighter; size of liver apparently normal, that of spleen diminished.

July 6.—Marked improvement; all bad symptoms have gone; spleen almost normal size now. Child playful.

July 8.—Fever has not returned, and the little patient appears to have completely recovered; digestive tract in good order; spleen apparently normal size. Child had in all 13 grains of phenocoll.

Case III.—Tertian Type.—M. F., male, farmer, twenty-three years of age. Had been ill a fortnight. When first seen was much emaciated; tongue coated; liver and spleen enlarged, the latter extremely painful; vomiting and diarrhoea persistent; tympanitis pronounced. Rectal temperature, 39.6° C. Fever accesses occurred at about eleven o'clock, A.M., followed by profuse sweating. Chills were not marked. Examined blood and found plasmodia. Ordered salol and bismuth subnitrate. On non-fever day (July 2) ordered 2 grammes (30 grains) of phenocoll in the course of the day.

July 3.—Digestive symptoms improved, no vomiting, and only three stools during the day. Rectal temperature at the hour of expected access, 37.8° C., and one hour afterwards, 38.2° C. Blood still contained parasites. Ordered another dose of 2 grammes of phenocoll on the following day.

July 5.—No digestive disturbances; tympanitis slight; the tongue almost clean; had only two well-formed passages; appetite improved; hepatic and splenic areas of dulness much diminished; could find no plasmodia in blood. Rectal temperature, 37.5° C. Suspended drug.

July 7.—Fever returned, with the appearance of parasites in blood. Ordered a third dose of 2 grammes during well day, but unfortunately the attendants failed to give it.

July 9.—Found patient in high fever, 39.1° C., at twelve o'clock M., with active diarrhea and frequent vomiting. Discovered that the medicament had not been given, and ordered it to be administered without fail on next day.

July 11.—All symptoms abated; liver and spleen very much diminished in size; tongue perfectly clean, and appetite voracious. Rectal temperature, 37.3° C. No plasmodia in blood. Ordered, however, a fourth dose, after which the patient entered into convalescence and recovery was established. Patient received 8 grammes (120 grains) of phenocoll, in all.

Case IV.—Tertian Type.—J.D., male, school-teacher, aged twenty-five years. Disease of three weeks' standing. Patient had been under the use of quinine until full cinchonism had been produced, but without avail. Was first seen July 3, and was yet deaf from the effects of the cinchona alkaloid; tongue coated; colicky pains, but no vomiting or diarrhœa; extreme emaciation; severe headache and backache; liver of normal size, but spleen greatly enlarged; appetite very poor. There was some orchitis present. Access of fever occurred at noon, preceded by severe chills and followed by pro-

fuse sweating. Temperature under the tongue, 41.3° C. Ordered phenocoll, 1 gramme at a dose. This was followed by a diminution of the acute symptoms, but micro-organisms could still be detected in blood.

July 5.—Gave I gramme in the morning and I gramme in the afternoon.

July 6.—Temperature under tongue, 38.5° C.; no headache and no backache; better appetite; tongue began to clear. Plasmodia still in blood.

July 7.—Ordered two more doses of phenocoll, I gramme each, as before. Temperature under tongue, at 10 P.M., 38° C. Improvement continued; spleen begins to diminish in size

July 9.—Tongue perfectly clear; excellent appetite; splenic dulness very much diminished. Temperature under tongue, 37.2° C. Orchitis much improved.

July 10.—Patient chilly at usual hour and showed afterwards a temperature under tongue of 39.3° C.; had a little nausea and a slight headache. Blood showed a few germs. Ordered two more doses of phenocoll a day for two days longer.

July 14.—Patient has apparently recovered. Orchitis gone. No return of other symptoms. Temperature under tongue, 37.2° C. Tongue clean; appetite good. No more plasmodia in blood

July 16.—Continued in good health; spleen apparently of normal size. Patient considers himself cured.

CASE V .- Irregular, Pernicious Malaria.-M. F. G., male, laborer, aged forty-two. Had been sick for five months, with short intervals of slight improvement in symptoms. Was first examined on July 12. Complained of excruciating pain over the region of the spleen, this organ being greatly enlarged; liver slightly increased in size; no appetite; coated tongue; nausea and vomiting, but no diarrhœa; on the contrary, constipation; suffered terribly from headaches. Accesses of fever occurred irregularly, sometimes in the morning, sometimes in the afternoon, sometimes at night. Patient felt chilly most of the time. Night-sweats abundant and very annoying; slight dry cough and loss of flesh. Careful examination, however, revealed nothing abnormal in the lungs. Had been taking quinine and arsenic, but had received no benefit. Rectal temperature varied from 38.2° C. to 40.1° C. Stopped all medication for a week, and placed patient under a nutritious diet only.

July 19.—Examined blood in the morning, but found no parasites; blood examined again

in the afternoon of the same day, when a few germs could be discovered.

July 20.—Put patient on phenocoll; was ordered to take 2 grammes (30 grains) a day.

July 22.—Marked amelioration of symptoms; better appetite; no headache; night-sweats very much diminished; cough disappeared; pain over the spleen less. Germs still found in blood. Temperature at rectum, 37.9° C. Continued the phenocoll as before.

July 24.—Patient quite bright. All symptoms apparently gone. No more night-sweats. Rectal temperature, 37.2° C. Spleen greatly diminished in size. Plasmodia gone. Suspended drug.

July 26.—Patient suffered a slight relapse. Blood showed a few parasites. Ordered phenocoll for two days longer.

July 29.—Patient considers himself cured. Blood free from germs. Spleen normal size, and no more pain. Rectal temperature, 37.2° C. Recovery was final, but ordered I gramme of phenocoll daily for a week longer in order to avoid relapses.

I could cite more similar cases, but I will refrain from so doing at present. already been observed by previous investigators (and my experience is corroborative), phenocoll, like quinine, is not always able to combat successfully the malarial poison. In some of the cases under my care the new drug failed to do any good by itself, but was successful when administered in combination with quinine, such cases having received no benefit from the previous use of the cinchona alkaloid alone. In other cases, which yielded perfectly to quinine and arsenic, phenocoll was powerless. Similarly, in a third class of cases, rebellious alike to arsenic and quinine, phenocoll did absolutely no good either, although it seemed to act always as an antipyretic. It is worthy of note that in most of those rebellious cases (at least in the majority of those in which the blood was examined microscopically) the plasmodia were generally found in the blood, even when the system was apparently saturated with either of the three medicaments. covery in these rebellious cases was obtained alone by change of climate.

The following records may be of interest:

Case VI.—Quotidian Type.—A.G. L., female, housewife, aged twenty-one years. Disease of one week's standing. Accesses of fever occurred at noon, accompanied with all the characteristic acute symptoms of the disease. There was loss of appetite, coated tongue, pain over splenic region, with enlargement of the organ; liver also slightly enlarged. Patient had head-

ache and backache; chilly sensations most of the time. Temperature under the tongue, 41.5° C. Patient first came under my observation July 8. Blood showed parasites. Placed her on full doses of quinine.

July 10.—No improvement as yet. Complained of deafness and fulness of the head,—in fact, of all the symptoms of cinchonism. Blood still showed germs. Temperature, 41° C. Discontinued quinine.

July 12.—Patient about the same. Cinchonism, however, gone. Temperature, 41.2° C. Parasites still in blood. Resumed quinine.

July 14.—Cinchonism reappeared, but no improvement in the condition of the patient. Temperature, 40.9° C. Plasmodia still present in blood. Discontinued quinine and waited for further developments.

July 17.—Patient a little worse; quite weak; complains of headache, backache, and pain over the spleen. Temperature, 40.9° C. Did not examine the blood. Ordered phenocoll in 1-gramme doses twice a day.

July 18.—Temperature, 38.5° C., but all other symptoms about the same. Plasmodia in blood. Continued phenocoll.

July 20.—No improvement, but patient believes her fever is better. Temperature during the usual access, 38.2° C. Blood not examined. Discontinued phenocoll.

July 21.—Patient worse. Temperature, 41° C. Blood showed parasites. Ordered a combination of quinine and phenocoll, 5 grains each, three times a day.

July 22.—Some improvement in all symptoms; tongue not so coated; pain over spleen very slight; no headache or backache; better appetite. Temperature, 37.6° C. Still a few plasmodia in blood. No symptoms of cinchonism. Continued combination.

July 26.—Patient very bright and believes she is well. Spleen and liver reduced in size. No pain anywhere. Appetite very good. Temperature, 37.4° C. Could find no parasites in the blood. No cinchonism as yet. Ordered the continuation of the same medicine.

July 28.—Patient apparently well. No fever, no pain, no parasites in blood. Liver apparently normal in size; spleen greatly diminished. Suspended the combination.

July 31.—Found patient exceedingly bright. She eats with an excellent appetite. Convalescence may be said to have set in and final recovery established.

CASE VII.—Quartan Type.—P. N. Z., male, clerk, twenty-four years of age. Did not remember exactly how long he had been sick, but probably about three months, with a few

intervals of improvement. Had taken quinine, then arsenic, to saturation of the system, almost without any benefit whatever. His chills and fever would come all the same. When first seen (June 29) he had not, according to his statement, taken any more medicine for about a week. He had been advised by friends to take lots of mescal (an alcoholic beverage manufactured from the century plant, agave, and almost worse than pulque so far as intoxicating properties are concerned). He had taken a few full doses, but had received no benefit. Spleen much enlarged and painful; liver of normal size. Patient was weak and had absolutely no appetite. His temperature under the tongue varied from 38° C. to 39.5° C. I advised him to abstain from everything except, of course, food for a period of a week.

July 7.—Examined blood and found that it contained malarial parasites. Ordered phenocoll in 1-gramme doses twice a day.

July 10.—No effect. Temperature, 38.5° C., but patient about the same. Plasmodia in blood. Continued drug in same quantities.

July 12.—No improvement, although temperature had been reduced to 37.8° C. Plasmodia still in blood. Continued phenocoll, I gramme a day only.

July 14.—Patient about the same. No amelioration whatever. Micro-organisms present still in blood.

I continued to see this patient almost every day until July 18, but never noticed improvement of any kind. I then suspended the pheacocoll, and advised him to change climate and go to the mountains. He followed my advice, and about a week afterwards wrote to me that he was doing very well. According to further reports from the patient, recovery was apparently completely established in about three weeks from the time he had left home. In this case medicine was useless. The change of climate alone was, evidently, too much for the plasmodia.

The few cases here detailed are sufficiently self-explanatory. I will, however, give a brief analysis of all the cases that came under my care, and which were subjected to the action of phenocoll alone. Twenty-eight cases were thus observed, of which twenty-one were successfully treated by the drug. In the other seven the failure of the new medicament to do any good was complete, although, as stated before, it always seemed to be able to reduce the abnormal bodily temperature. This is diametrically opposed to the statement of Dall' Olio,—that is, as regards the value of the

drug as an antipyretic; but it agrees with the experience of Cervello, who has stated that phenocoll is not only highly serviceable in intermittent fever, but that it is also a decided antithermic.

Of the seven failures, three cases yielded afterwards to quinine, and the other four, in which even quinine had done no good, were finally cured by the administration of arsenic.

In therapeutic doses, phenocoll has no poisonous properties and is well borne by the stomach. Some of my adult patients took 1, 2, and even 3 grammes a day, for four, five, and more days consecutively, without experiencing any disagreeable after-effects from the drug.

Now, it would be of scientific interest to know how phenocoll, when successful, acts in malarial fever. Does it, as is claimed for quinine, exercise a direct influence on the plasmodia, destroying them or arresting their development? It is true, the remedy sometimes fails completely, as has been shown, to combat successfully paludal intoxication, this failure appearing to correspond precisely with the non-disappearance of the peculiar parasites from the blood of the malarial patients. The same phenomenon is sometimes observed with quinine and even arsenic, the administration of these substances being followed by no effect whatever on the disease in question.

It has been apparently demonstrated, particularly by the studies of Councilman, that quinine, as well as arsenic, fails to act upon the crescentic organisms. May not phenocoll behave in a similar manner?

That phenocoll may act directly upon the hæmatozoa, precisely in the same way as does quinine, is highly probable. The evidence brought forward in the few reports here given, as well as that of other of my cases not detailed in this paper, strongly indicates that the new drug affects the germs of malaria directly. The observations, again, of Beck appear to lead to the support of this view. This investigator found, indeed, "that phenocoll hydrochloride is probably as valuable an antiseptic as iodoform, and stronger than dermatol, aristol, iodol, pyoktanin, europhen, etc." Why may not the drug in question be also a bactericide? The point certainly is worthy of investigation.

Before concluding this imperfect paper, I wish to record my very brief experience with phenocoll in the treatment of neuralgic disease. Three marked cases of facial neuralgia, occurring in females, yielded magically almost to the influence of the drug. One case of sciatica was very much relieved by phenocoll,

but in another of similar nature the new medicament proved fruitless.

As may be observed, my experience with phenocoll in the treatment of malaria corroborates that of previous investigators. The drug cannot, of course, be considered as a specific in the paludal malady, but, so far as observations go, these appear to show that phenocoll, though not able, perhaps, to entirely replace the good old cinchona alkaloid, may claim the serious consideration of the practitioner in the treatment of malarial affections. For the present, at least, the good results obtained warrant the further trial of the new medicament in paludal disease.

GALVESTON, TEXAS, August, 1893.

SOME POINTS IN THE TREATMENT OF THE URIC-ACID DIATHESIS.

READ BEFORE THE SECTION OF THERAPEUTICS OF THE FIRST PAN-AMERICAN CONGRESS.

BY F. E. STEWART, M.D., PH.D.

I'T seems now to be quite generally admitted that uric acid as such, and as urate of sodium in the system, is the cause of gout; and not only of gout, but it is the cause also of "high arterial tension, headache, epilepsy, mental depression, rheumatism, diabetes, Bright's disease, and other disorders in which the presence of uric acid in the urine is a marked symptom."

Accepting this statement as true without argument, for my paper deals with another branch of the subject, I desire to call your attention to some practical points in the treatment of patients suffering with the disorders associated with excess of uric acid.

Da Costa has published an article recently on "The Albuminuria and the Bright's Disease of Uric Acid and Oxaluria," calling attention to a group of cases in which digestive disorders occur, and in which the disturbed nutrition manifests itself in the urine chiefly by the high specific gravity, the urates, and the presence of albumin and casts that are commonly thought to indicate Bright's disease.

What called my attention to the subject was the fact that many cases have fallen into my hands as a physician in connection with one of the leading American spas, of mental depression, rheumatism, gout, glycosuria, albuminuria, in which uric acid, urate of sodium, and the oxalates have been the marked con-

stituents in the urine. After reading Da Costa's article, and also Haig's very interesting and instructive work on "Uric Acid," † I commenced taking more extensive notes in connection with my practice and reading; and I have had an opportunity to verify the work of others in some ways, and I have also a few points of more or less value to present that I have not seen published hitherto.

Several authorities have called attention to uric acid as a cause of glycosuria and diabetes. Garrod says, "In the course of practice I have seen several cases in which gouty patients have become affected with saccharine diabetes or glycosuria." Roberts says, "The subjects of obesity and of the gouty diathesis are very prone to a mild form of diabetes." Similar observations are made by Lathane, Anderson, Haig, and other well-known authors.

It has been my lot to have under my care two cases of this kind during the past year. Both of these passed urine of high specific gravity, 1034 to 1035; both had free uric acid in the urine; the quantity in both was subnormal,—viz., 24 to 25 fluidounces, or about 750 cubic centimetres in twenty-four hours, with about 18 to 20 grains, 1 to 1.35 grains of sugar to the fluidounce (30 cubic decimetres). After a two weeks' course of iodobromated saline water (Deer Lick Spring, Glen Springs, Watkins, N. Y.), one of these cases was cured. The other still under treatment has improved to a marked degree.

The next observation that I have been able to confirm is that of Pfieffer, of Wiesbaden, in relation to the effect of saline baths in the treatment of uric-acid cases.

Pfieffer, of Wiesbaden, who has made the most complete experiments to determine the mode of action of mineral-water baths in gout, says that, after a series of twenty warm baths of this kind, at a temperature of 93° F., in healthy persons, there was never found any essential difference in the amount of uric acid eliminated. Previous to the beginning of the experiments the uric acid was mainly found united, but after the twenty baths it was almost invariably found free.

"After treating gouty patients with a course of twenty similar baths, it was found that the quantity of uric acid eliminated was considerably diminished as compared with the period before the use of the baths. It was usually diminished fifty per cent., and at times only a

<sup>\*</sup> American Journal of the Medical Sciences, January, 1893.

<sup>† &</sup>quot;Uric Acid as a Factor in the Chusation of Disease," Alexander Haig, M.A., M.D. P. Blakiston & Co., Philadelphia, Pa.

trace was discoverable. It was also found that the acid was in a state of combination after the employment of the baths, while previously it was nearly always in the free state. The uric acid remains often for several weeks in combination with a base."

Pfieffer concludes from these observations that the thermal water of Wiesbaden has a marked effect on gout. There is every reason to suppose that other commonly-employed saline thermal waters have similar action. It is probable, however, that the saline constituents of the waters have a beneficial influence distinct from the heat itself, for it has been proved that ordinary hot baths do not have the same influence. While it is true that I have not gone into such elaborate researches as Pfieffer, vet I can testify to the truth of his observations concerning the effect of mineral-water baths in uric-acid cases. I have found that mineralwater baths in which I employed the Neptune brine of the Glen Springs decidedly influences the elimination of uric acid. In one of my cases I observed that while forty grains of potassium bicarbonate did not neutralize the urine, when given alone, yet when employed with the bath the urine at once became alkaline; and the free uric acid, which existed before, in spite of the alkaline treatment, disappeared in a few days after the hot brine baths were added.

In regard to the diet in uric-acid cases, I have adopted as a rule that laid down by Haig. He says that the following diet reduced his urea from 500 to 600 grains daily to about 300 grains, giving him at the same time immunity from uric-acidæmia and its unpleasant results. It is only by adopting proper diet that these cases can continue in good health after any form of treatment.

Of animal food: Milk, I to I½ pints; eggs, fish, fowl, or game, I to 4 ounces, varied a little from day to day. Haig recommends that the milk be previously boiled. Of vegetable food: Vegetable prepared products, vegetables twice a day; fruit three times a day, to any desired extent, according to appetite. Tea, coffee, cocoa in moderation, and as flavorings rather than as strong decoctions.

When the condition is complicated with dyspepsia, various modifications must occur according to circumstances.

It is, of course, a well-known fact that "regular exercise promotes metabolism and secures the proper performance of the functions of the different eliminating organs." Hence the value of exercise in the treatment of the uricacid diathesis. By it tissue waste is thrown

off. The superior facilities of mineral spas in this connection are well established. The exercise should be mental as well as physical. It should preferably be taken in the open air. For this purpose classes in geology, botany, and kindred sciences requiring out-door explorations are invaluable while drinking the waters. In-door physical training, including light gymnastics, fencing, Swedish movements, massage, both manual and mechanical, all serve their turn.

By adopting a course of treatment of the kind that I have mapped out in place of medication, the use of drugs in the treatment of the uricacid diathesis can be entirely dispensed with in the majority of cases; and in cases where drugs seem necessary, the cure can be greatly hastened and facilitated by such means. These means are too frequently neglected by the profession. There are hundreds of valuable mineral springs in America well adapted for such use, yet how little they are employed by physicians as therapeutic agents! It is high time for medical men in this country to take hold of the natural advantages of their country in this line. tions of the right kind should be established all over the United States, in charge of capable physicians, for the purpose of securing to the people the proper administration of such means of cure. It is to further this idea that my paper has been written.

PREPARING DELICATE PREGNANT
WOMEN FOR LABOR BY PROPER
EXERCISE AND FEEDING, AND
FEEDING AT FREQUENT
INTERVALS DURING
LABOR.

By F. GUNDRUM, M.D., Escondido, CAL.

CASE I.—In 1884 I was called by a brother practitioner to see a case of difficult (?) labor, and gathered the following facts in regard to the patient: She was an only daughter of well-to-do parents. As a child, she was slender and delicate. She began school-life early, but took very little exercise, neither playing with her comrades nor busying herself with household duties.

Menstruation came on rather late, was irregular, and attended with some leucorrhœa. At twenty she was a tall, slender, small-boned, light-haired, flabby, neurotic girl.

She married at the age of twenty-two, and soon became pregnant.

During pregnancy she exercised little, and subsisted on delicacies and what was palatable rather than on nourishing food. She went to full term, and labor set in about 10 P.M. October 3. She soon vomited her supper, which was undigested. The medical attendant was called about 1 A.M.

The "pains" were rather irregular until about 3 A.M., when they became regular, occurring once in seven to eight minutes. At 7 A.M. the membranes ruptured, although the cervix was dilated very little. Labor took its weary course, and at 5 P.M. the head cleared the cervix and began to descend, and the occiput engaged under the pubic arch.

The pains had been regular and of pretty good force. The head began to press on the perineum, and new force was necessary to overcome this new resistance. Indifferent progress was made until twelve midnight. Ergot was now administered, in the hope that it would whip up the flagging uterus. Under the influence of this drug the contractions became irregular and tetanic. At 3 A.M. I was called in to the case.

The patient was physically exhausted; pulse 130, small, and weak; bowels tender; head presenting in the first position; perineum rather undeveloped and unyielding.

After administering some nourishment and stimulants, ether was given, and she was delivered of an eight-pound dead child by aid of the forceps.

The patient recovered her former health after two months of careful feeding and nursing.

This poor, delicate woman went through twenty-eight hours of the severest physical exertion and suffering; more than any one ever supposed she could endure. During that whole time she had two cups of tea and a cracker with each cup of tea.

The physician in attendance took his regular meals, a lunch during the night, besides considerable sleep, and of course he "stood" the labor well.

At the end of fourteen months this lady became pregnant for the second time. I was asked to take charge of her. I compelled the patient to take regular exercise out of doors, and she did part of her household work. Her food was of the most nutritious kind; all pies, cakes, etc., were prohibited. August being rather a sultry month, she received a cold sponging every morning and a thorough rubbing down. She was taken in labor September 12, I A.M., and I reached the house at 3 A.M.

I had the patient's mother prepare a beef extract and also an eggnog. The dilatation was to about two inches. The membranes ruptured at 4 A.M. The dilatation having

made little progress by 6 A.M., I proceeded to help nature in her apparently tedious task. By 10 A.M. we had the head through the cervix. The pains now became strong, regular, and frequent. By 6 A.M. we had a good rich beef extract prepared, and we began to feed the patient the beef-tea and eggnog. There was very little brandy in the eggnog; just enough to flavor it.

The patient received a few tablespoonfuls of these nourishments every eight to fifteen minutes, besides some strong coffee with cream now and then. At 2 P.M. she was delivered of a nine-pound, healthy boy.

At the end of labor this patient was almost as fresh as when she commenced, and made a rapid recovery.

Case II.—Mrs. J., aged twenty-four, nativeborn. This patient was born in one of the Eastern States, and raised there to womanhood. She was a delicate girl, and although never actually sick, was a good deal under the doctor's care, and took a great deal of cod-liver oil to build her up. She grew up to be a tall, slender, nervous, excitable person, with cold hands and feet. She was married in April, 1892. The excitement of marriage and a trip East about used her up. She returned home the latter part of May, anæmic, very nervous, no appetite, and so weak that a walk of a few squares would exhaust her. She missed her menses in the early part of June. She soon experienced great pain in the back and an inability to walk, feeling as though all her pelvic organs would "fall out." Her physician insisted on her taking exercise. I was consulted in July, and found her completely exhausted. The uterus was highly anteverted, causing much irritation of the bladder.

I concluded to follow Aveling's suggestion of postural treatment. The bedstead was elevated six inches at the foot, and when the patient was lying in it a small pillow was placed under the head and a big one under the hips. This relieved all pelvic symptoms promptly. She was kept in this position most of the time till the uterus rose out of the pelvis, when she was allowed to get up. Riding in a carriage was ordered two or three hours daily. The riding was gradually substituted by walking exercises. During all this time the greatest attention was paid to her diet.

By the time she was confined, through properly-regulated exercise and proper feeding, this delicate woman had become strong and robust (for her) and full of good rich blood.

She was taken in labor March 13, about 11 A.M. The membranes ruptured at 12 M.,

and I reached the house at 12.30 P.M. The cervix was dilated to the size of a silver dollar. The beef extract was prepared. The patient had vomited her breakfast. Very little progress at dilatation having been made by 2.30 P.M., I assisted in that process, and at 4 P.M. the head had passed through the cervix. Pains were regular and strong. The head now began to bear down on the perineum, which was thin and unyielding. Although uterine contractions were strong and regular, the head seemed to make little progress.

From 3 P.M. the patient received beef extract every five to ten minutes, and when her labor was the severest she called for it between every pain, saying it strengthened her so much. The rigid perineum was finally overcome by massage and the vis a tergo by 7.30 P.M., and an eight-pound boy was delivered.

I feel like apologizing to the reader for going at such length into what may seem very common cases. Yes, Case I. is far too common, and if this article will make them a little more uncommon, I shall be satisfied.

Case I. in her second confinement and Case II. in her first, did as well as do most women of naturally robust constitution. Neither exhibited signs of exhaustion.

Owners of horses intended for the track take the greatest care in feeding and exercising to bring their animals to the highest physical perfection for the contest.

Our two-legged brutes who prepare themselves for the ring are subjected to regular and rigid training, and receive the most nutritious and carefully-chosen diet to bring their physical power and endurance to the highest degree, but how much attention is usually paid by practitioners to the pregnant woman? And we expect that a delicate woman shall go through the physical ordeal of labor as a matter of course, and when she don't, then we have the forceps.

Let me ask every practitioner who attends to the obstetric branch of our profession to commence early to prepare his obstetric cases that are inclined to be weak and delicate. Yes, the majority of cases will bear seeing to, and by exercise and proper feeding he can prepare them for the contest. In labor pretty much the whole muscular system is brought into energetic exertion. The greater the muscular development the better will such exertion be sustained. I would call especial attention to the muscles of These can be trained and dethe abdomen. veloped by exercise, so as to give us great aid in the expulsion of the child. Muscles, when in action, must have nutritive material to act

on, or use up, to keep up their energy, and therefore it is of the greatest importance to give food which is readily absorbed into the bloodmass, where it can reach the muscular fibres to be split up into energy; hence it is necessary to feed your patient through labor.

My advice is, do not wait until your patient is exhausted and then begin. It will be too late. This would be as rational a course as for the fireman on a locomotive to start a good fire, bring his steam-gauge up to 100, and then let the fire go out until the gauge got back to o again.

I have followed the plan of practice above related for many years, and have every reason to be satisfied with it. Our text-books give very careful accounts of inertia uteri, forceps delivery, etc., but no directions are given as to the prevention of these complications.

I believe the practice of bringing the system up to a high state of physical energy, and keeping up that energy during labor, will add to the vigor of the offspring, diminish the duration of labor, lessen forceps cases, and prevent many of the lying-in troubles that are now too common.

I am well aware that some authorities claim that beef extract or beef-tea is little more nourishing than urine. I know by personal experience that a well-prepared beef extract will produce energy. The elegant and partly-digested foods now prepared by pharmaceutical establishments can be utilized with great advantage in sustaining the strength of a woman in labor.

#### A PLEA FOR PHYSIOLOGICAL REMEDIES.

By Simon Baruch, M.D.

Attending Physician Manhattan General Hospital and New York Juvenile Asylum; Consulting Physician Montefiore Home for Chronic Invalids, New York City.

THOSE agents which contribute to the maintenance of the functions of the body being physiological, may, when they are applied in disease, be termed "physiological remedies." Rest, exercise, diet, air, and water belong to this category.

I propose to show that a methodical application of these agents in diseased conditions may accomplish far more than the most vaunted medicinal agents. It is not my purpose, however, to antagonize the latter, because their value as palliatives must be accepted by all practical men. It is rather the purpose of this paper to call attention to the *neglect* of physiological remedies, to point out wherein lies their superiority, to emphasize the fact that they are more readily applicable than is commonly supposed, and to demonstrate that their more frequent use would accrue to the benefit of our patients. The modern status of therapeutics cannot be regarded as satisfactory to the true physician.

The materia medica consists chiefly of medicinal agents whose action on the human body is, with the exception of very few, exceedingly uncertain, and whose reputation rests almost entirely on the empirical results obtained by them, results which are but too often disappointing. How often is the conscientious searcher after truth able to say at the bedside that he has accomplished by means of any single medicine, or by any combination of medicines, the cure or removal of any disease? With the exception of quinine, and perhaps of mercury and the iodides, of which there is still much doubt, there is not one single medicinal agent to which may be ascribed actual curative virtue. We are, therefore, forced to the conclusion that the medicinal agents which are resorted to so constantly by the profession possess other claims to our recognition. In common with all my colleagues, I habitually resort to them in practice, and therefore I would be the last man to decry them.

This proposition may be illustrated by important medicinal agents which are in daily use at the present time. Salicylic acid is, perhaps, the most potent of all symptomatic remedies, contributing to the cure of acute articular rheumatism as did none of its much-vaunted predecessors.

It must be patent to the most enthusiastic polypharmacist that he accomplishes only an amelioration or removal of certain manifestations of disease. This effect may and probably does facilitate a restoration to health. In that large preponderance of acute diseased conditions to which belong the acute exanthemata and all infectious diseases, the administration of these medicinal agents is entirely symptomatic; in many of them absolutely injurious.

What has been well said by Dr. Aulde of opium, which has been for centuries regarded as the sheet-anchor in many diseased conditions, may not inaptly be applied to most other medicinal agents. "Disease is not modified, except to a limited extent in certain directions, by the use of opium, and when employed to subdue pain it is a most treacherous remedy. Like the smoke of battle, opium hides the movements of the enemy. And not only that; it gives the practitioner a false sense of security. Therefore the clinical value of opium prepara-

tions lies in their power to obtund temporarily the nerve-functions, which permits repairs to be made in the affected areas."

The Italian clinician Cantani has eloquently and persistently impressed the warning, Nil nocere. To avoid damaging the system which is staggering under disease and needs every possible aid on the part of the physician should be our great and constant aim. In this day of coal-tar antipyretics, which "hide the movements of the enemy," if they do not aid his hosts, this warning is specially appropriate.

At the present time medical men are almost unanimous in the belief that the only direction in which therapeutic effort is available lies in following the tendencies of each disease, and yet there is too much drugging. In acute inflammatory conditions rest of the inflamed organ is the prime factor in its recovery, just as it is in surgical conditions which are more patent to the senses. In more chronic conditions a cautious exercise of the functions of the organ involved, alternated or not with judicious rest, is the chief indication. To meet these indications our remedial agents should be applied.

To apply these principles to a representative acute disease, let us choose typhoid fever. Here we have a malady which runs a more or less definite course, whose etiological factors are beyond our control. We are called upon here to contend against a toxæmia which exercises a depressing, a devitalizing, influence upon the central nervous system. Every function which draws its force from the latter suffers visibly. The brain itself is more or less overwhelmed: the heart is the member chiefly weakened if force is diminished; the lungs act feebly; the temperature rises; the kidneys and skin act deficiently. In brief, the patient's vitality is sapped, because the organs upon which it depends receive imperfect sustenance from the nervous system.

All modern physicians are agreed that every effort should be made to maintain the patient's vitality,—to counteract the probable toxæmia, be it due to micro-organisms or not; in short, to sustain life until the disease has run its course. The expectant treatment, so called, was the outcome of the fatality of the former spoliative treatment. Liebermeister's great success in the Basle Hospital made high temperature the great point of attack. So long as we had no real medicinal antipyretic, it was not clear whether to the (medicinal) quinine or to the (physiological) baths administered by him were due the superior results which he attained. The high temperature idea was plausible, and gained adherents rapidly until the discovery of the coaltar series brought to the physicians the first real antithermic remedies. A few years' use of these positive remedies awakened the profession to the fallacy that high temperature was the chief lethal agent. To-day a reaction is impending. While in the medical centres the coal-tar antipyretics are being reluctantly abandoned, it will be long ere the less enlightened rural doctor will let this comforting drug slip from his fond grasp. The use of veratrum viride, whose positive lowering of the rate and tension of the pulse gave rise to great hopes, also proved a delusion in the past. The use of internal antiseptics is to-day advocated by some. These observers are doubtless honest; but as they cannot demonstrate that the mild antiseptics (naphthalin, naphthol, sulpho-carbolate of zinc, etc.) are capable of so disinfecting the intestinal contents, which vary greatly in quantity, and as they are not able to demonstrate the probability of these dilute antiseptics selecting and reaching just those surfaces in the long tract which require their aid, the fallacy of this idea is at once apparent. In empirical observations we require positive data. The fact that there are fewer bacteria in the fæces after some of these antiseptics are administered, even if it had ever been positively demonstrated, does not by any means justify the deduction that the intestinal mucous membrane has been rendered aseptic or otherwise benefited. The surgeon would not be content with such a demonstration, why should the physician be?

It follows, therefore, that the most powerful agents—agents whose effect has been positively demonstrated, as veratrum and the coal-tar antipyretics—have simply afforded the physician means for suppressing certain pronounced symptoms. Pulse and temperature are still important indices to the condition of the patient. Nevertheless, despite the fact that we have positive medicinal agents to bring them to a nearly normal standard, these are proved absolutely harmful by good observers. Hence the physician is forced to acknowledge his entire dependence on the vis medicatrix, which he attempts to aid by withholding all injurious elements and utilizing physiological remedies. Rest, seclusion, proper adaptation of food and drink, cleanliness, are the chief agents in the so-called rational plan of treatment, whose superiority over the former spoliative and the present antipyretic treatment clinical observation has demonstrated.

There is, however, one *physiological remedy* which, if as cautiously adapted to the case as are diet, rest, etc., produces a vast improvement in the condition of the patient

and in the final issue of the case. The bath treatment of typhoid fever no longer requires defence before an enlightened medical audience. It has demonstrated its value in so many clinical tests on large numbers that I need |refer here only to the salient advantages. Being a physiological agent,—i.e., an agent which, used in health, promotes the latter, -its judicious application is as potent as that of air, food, and rest. Its injudicious application would be usually injurious. For example, the wrapping of a typhoid patient in a cold, wet sheet, and sprinkling him with ice-water until the temperature is reduced (a method actually used by some eminent practitioners) is as injurious to the patient as the exposure to draughts of cold air or the administration of a mixed diet would be. In the one case it would still be bathing; in the other it would still be ventilating and feeding. In all it would be an injudicious, senseless application of useful remedial agents.

The judicious application of ventilation and diet are pretty well understood by the profession; the judicious application of water is still a terra incognita to the large majority. It is true nearly all utilize it in some form; cold sponging is quite commonly adopted in fever, and yet the feeble refreshment obtained may be aptly compared to the ventilation obtained by an inch opening of a window. Injudicious application may take both extremes of direction, doing too much or too little. Very cold baths and ice-sheets do too much; sponging does too little.

The Brand bath has proved the most successful method of treating typhoid fever. The more nearly we approximate to this bath, heroic though it seems, the more nearly will we approximate its grand therapeutic results. This has been acknowledged by Jörgensen and others, and it is the personal experience of many, myself included. The rationale of the bath is so simple that it appeals to our best judgment at once. We have an overwhelming of the nerve-centres by the products of infection. The shock and subsequent stimulus to the cutaneous surface are conveyed to the nerve-centres and thence reflected to the heart, lungs, and other organs. Observation at the bedside at once renders these effects patent. The mind loses its obtuseness, the face brightens, the tongue becomes moist, the respiration deepens, the heart acts more slowly. the secreting glands are aroused to activity. Moreover, the temperature is reduced, not so violently as by medicinal agents, but more definitely, more in accord with normal tendencies. In brief, all the manifestations of the disease are favorably influenced, because the normal standard is slowly but steadily and lastingly approximated under the influence of repeated judicious bathing. Here we have an obvious illustration of the action of medicinal remedies and physiological remedies in a very common acute disease. While in those of short duration and characterized by absence of serious depreciating tendencies medicinal agencies are more useful (chiefly because more agreeable and practicable) than baths, the latter are far superior in all those acute maladies which endanger life. Physiological remedies like the bath, though unpleasant to patient and friend, absolutely give aid and sustenance to the crippled organs which are struggling to maintain life; while medicinal agents, though agreeable to patient and friend, serve only to enfeeble the heart, cripple the kidneys, and thus aid the disease rather than the patient. If there be any doubt in this assemblage on this subject, I am ready to maintain this thesis by unimpeachable testimony.

To illustrate the superiority of physiological remedies in a chronic disease, I propose to take chlorosis. This is chosen because the profession regard it as a chronic disease, whose nature is about as well or as badly understood as any other, but for the treatment of which certain remedies have long been in repute. Chronic diseases do not, like acute diseases, tend to spontaneous recovery, chiefly because patients affected by them are not, as they are in acute disease, forced to be removed from their etiological agencies, and they are not, as in acute disease, subjected to physiological remedies. A patient suffering from typhoid or scarlatina is withdrawn from the source of his infection; he is placed at rest; a proper diet, etc., are usually afforded him as a matter of course. A young woman suffering from chlorosis usually remains within the sphere of the etiological factors of her disease, while the doctor attempts by iron, good food, etc., to reconstruct the blood, which is unhappily regarded as the chief point of attack. There can be no doubt in the mind of any practical observer that the same care that is given (perforce) in typhoid fever to the removal of the patient from his unfavorable environment would, if afforded the chlorotic girl, conduce far more to her recovery than the faithful dosing with iron in any of its more or less vaunted forms.

Who has not seen a pallid school-girl, who had been for months dosed in vain with Blaud's pills, regain her ruddy color, spirits, and appetite as soon as she is removed to the country,

where she has access to unpolluted air, water, and food, and is allowed untrammelled movement of muscle, lungs, and heart? Physiological remedies are as potent for good here as they are in typhoid. Many of the latter recover under the expectant or medicinal treatment; more recover under the expectant non-medicinal treatment; more recover under a rational application of all physiological remedies. Many cases of chlorosis recover at home, even under unfavorable conditions and unphysiological treatment; more recover under the judicious use of exercise, rest (which is just as important), proper (not necessarily so-called strengthening) food, etc.

This is the burthen of my plaint. I would have it proclaimed from this assembly that physiological remedies are to-day the most powerful weapons against disease. Their use and abuse should be studied with at least as much care and bedside observation as the medicinal agents which are issuing in rapid succession from the laboratory of our good friends the pharmacists. Prove all and choose the best,-viz., those remedies which combine the most good with the least harm. Our judgment must be untrammelled by prejudice in this most important branch of medicine. Hippocrates wisely said that experience is fallacious, and vet the whole structure of therapeutics rests upon this basis. Let us, therefore, build it firm and broad and deep with the aid of physiological and pathological experiment, so that posterity may not flounder in the mire of uncertainty, as our predecessors have done.

With this view I would call attention to the great neglect of one physiological remedy in chronic diseases,—water. Its value in acute diseases is now so firmly established in the minds of some of the best teachers on this continent (Osler, J. C. Wilson, Peabody, Gilman, Thompson, and others) that I may well leave its fate to the good seed annually sown by these earnest men.

In chronic diseases, however, which are the bane of our lives and the opprobria of medicine, much proselytism is required to arouse a just appreciation of the great value of water as an auxiliary to other physiological remedies. Abroad this is no longer the case. From Naples comes the cheering voice of the great Semmola, chief of the clinic and professor of therapeutics, who tells us that in visceral diseases which defy our best-directed efforts, real marvels of restoration may be accomplished by the application of diet, exercise, air, and especially hydrotherapy. The internal and external use of water has accomplished real marvels

of recovery in the most desperate cases. And this voice is echoed from a clinical teacher in New York. Dr. W. H. Draper tells us that in all chronic diseases in which the nutrition is faulty, the results of hydrotherapy are very striking. It seems to be far more effectual than medicinal remedies. Our own Osler laments the increase of pharmaceutical preparations, while the more potent (physiological) hygienic agencies are neglected. The dawn of a better day for rational therapeutics is breaking. There is a ray of hope brightening the dreary past. To broaden it and arouse my confrères to a more attentive investigation of those physiological remedies which were introduced by the father of medicine himself, and which have resisted the onslaughts of pseudo-scientific medicine in all epochs of its history; to further their practical application by my colleagues,this I have made the mission of my life. May the simple plea here offered awaken to action that appreciation of physiological remedies which I am sure lies more or less dormant in the mind of every practical physician.

I plead more especially for the most valuable and yet most neglected physiological remedy,—water,—because it fulfils every demand of a remedy. Its action is explicable on rational principles, its effect may be accurately modified to suit individual conditions, and its clinical results are unimpeachable.

If used in conjunction with other physiological remedies, its powers for good are readily ascertained.\* I plead for a more thorough study and application of water as a remedy in acute and chronic diseases, because it is the least understood of all physiological remedies.

51 WEST SEVENTIETH STREET.

IS THERE SUCH A THING AS GALVAN-IZING THE BRAIN!

By H. A. HARE, M.D., Professor of Therapeutics in the Jefferson Medical College.

AT one of the sessions of the Section of Neurology of the Pan-American Congress an interesting paper was read upon the treatment of the post-apoplectic state. In this paper the author claimed that marked improvement in the paralysis followed the application of galvanism to the head, one pole being placed at the occiput and the other on the forehead. The idea was that by this means the current

passed from pole to pole through the brainsubstance, and so modified nutrition that the apoplectic injury was favorably modified. In the discussion which followed, I emphatically expressed the belief that the current of electricity never passed through the brain under such circumstances, but by the path of least resistance,-namely, through the scalp from pole to pole. The physical laws governing the question seemed to him so self-evident that this conclusion was indisputable, for surely the current would find a pathway through the scalp far more easy to traverse than one through the scalp, bone, and membranes at entrance and exit, with the brain-substance interposed. While some of those present agreed with me, the majority felt convinced that the current did pass through the brain-substance, and instances were cited where undoubted improvement in motility had followed this method of treatment, and where marked symptoms were produced in healthy persons by the application of the poles to the two temples. It is not my intention to try to explain, even if I could offer a proper explanation of these facts, the causes of these phenomena, which may be due to reflex nervous or vaso-motor changes, but to detail an experiment which proves practically what most persons familiar with the physical laws governing electricity already recognize as a fact.

The fact being admitted that electricity always flows in the direction of least resistance, the problem to be solved is simply whether the roundabout route by the scalp or the more direct one through the head from side to side offers the most resistance.

The positive pole of the battery was applied to the occiput and the negative to the forehead of a large dog, and a milliampèremeter placed in the circuit now registered five and three-quarters milliampères. The dog The milliampèremeter was then trephined. still in the circuit, a needle, thoroughly insulated except at its tip, was inserted into the brain-substance, being attached, of course, The milliampèremeto one of the poles. ter now registered three and three-quarters In other words, the resistmilliampères. ance to the current when one of the poles was bare metal and in the middle of the brain was greater when the current had to pass through the wet sponge, bone, membranes, and scalp than when the current had to pass from pole to pole by the scalp. If this is the case, how much greater must the resistance be when the current has to pass through both sides of the skull instead of only one side, as in my experiment? If the current passed through and

<sup>\*&</sup>quot;The Uses of Water in Modern Medicine," and article "Hydrotherapy," Hare's "System of Therapeutics."

through, as is believed by some persons, the patient would be thrown into a convulsion through excitation of the motor cortex every time the current was made or broken, and any one who has applied the feeblest of currents to this motor area will appreciate the fact that very powerful motor impulses are excited by this means. That improvement follows cranial galvanism I have no intention of denying, as many well-qualified practitioners record cases in which improvement has taken place. My object is to point out that the benefit must be obtained indirectly and not by the direct effect of the electrical current on the cranial contents.

# TREATMENT OF DIPHTHERIA WITH PAPAYOTIN COMBINED WITH CARBOLIC ACID.

Drs. E. Levy and H. E. Knopf have an experimental and clinical article on this subject in the Berliner Klin. Wochenschrift, August 7, 1893. Following Behring and Wernicke, they treated with half-per-cent. carbolic acid pure bouillon cultures that had been kept for four to eight weeks in the incubator. The cultures so treated remain absolutely sterile, but maintain their poisonous properties. Five-tenths of a cubic centimetre of diphtheria-poison prepared in this way suffices to kill an adult guinea-pig in two days, with symptoms of diphtheria-poisoning. But if to this diphtheriapoison some papayotin is added, and the mixture allowed to stand at a temperature of 98° F. for two days, animals bear as much as two cubic centimetres. Guinea-pigs with these large doses become very sick; at the point of inoculation occur large necroses, which slowly heal. But nearly all animals experimented with survive, though they do not become immune. papayotin has therefore exercised its digestive power upon the poison and has considerably weakened it.

It occurred to the experimenters to try locally in human diphtheria a combination of papayotin and carbolic acid, especially as the latter does not prevent, though it retards, the digestive power of the former. Their idea was that the papayotin would exert its solvent action on the membrane and so enable the acid to penetrate. Again, the carbolic acid would destroy the bacteria, while the papayotin would weaken the specific poison.

A solution was made up as follows:

Papayotin (Gehe), 10 parts; Carbolic acid (purest liquefied), 5 parts; Distilled water, 100 parts. M. Sig.—Shake before using.

During the first two hours it was painted on the membrane every ten minutes, subsequently at two-hour intervals, and as far as possible also during the night. The improvement was nearly always immediate and striking; from one application to another the membrane became smaller, and often disappeared after a few hours. In a few cases the process ended there; in the majority the membrane reappeared if the painting became less energetic, or if, as at night, it was stopped; but only rarely was the definite disappearance of visible membrane deferred longer than two or three times in twentyfour hours. Cases of diphtheria with thick false membrane and slight infiltration of the subjacent tissue responded better to treatment than those with much infiltration and thin membrane.

Other measures which time had proved valuable in their children's clinic at Strasburg—ice to the throat, copious inhalations, and much wine—were also employed.

In estimating their results they refer to the fact that children brought to their clinic with diphtheria generally have it very badly, and that every case was submitted to the papayotin and carbolic acid treatment without selection, unless an operation was immediately necessary. Sometimes even a tracheotomy was postponed, in the hope that treatment might make it unnecessary, and this hope was justified in several cases.

In brief, the statistics are: fifty-one cases, with thirty-six recoveries (one after tracheotomy) and fifteen deaths (five after tracheotomy); seventy-one per cent. of recoveries, twenty-nine of deaths, of which nine per cent. occurred after tracheotomy.

Among the fatal cases there was a series of severe complications: one had a croupous pneumonia, one tuberculosis of both lungs and pleuræ, one repeated hemorrhage from the tracheotomy wound; three cases showed extensive broncho-pneumonia; one of these died fourteen days after complete disappearance of all the symptoms of diphtheria.

Among the cured cases also there were severe complications: nasal diphtheria occurred in three cases, signs of more or less intense stenosis of the air-passages in ten, albuminuria in four, measles twice, croupous pneumonia and post-nasal abscess once.

In conclusion, the authors state that they have been experimenting with the non-poison-ous thymol, in two-per-cent. solution, as a substitute for the carbolic acid of the treatment, and have obtained similar results. They promise a later communication on the thymol-papayotin treatment in human beings.

### The Therapeutic Gazette

H. A. HARE, M.D.,
GENERAL THERAPEUTICS.

With special departments under the charge of G. E. DE SCHWEINITZ, M.D., OPHTHALMIC AND AURAL THERAPEUTICS,

EDWARD MARTIN, M.D., SURGICAL AND GENITO-URINARY THERAPEUTICS.

#### GEO. S. DAVIS,

Medical Publisher, Box 470,

Philadelphia, 714 Filbert Street.

DETROIT, MICH.

### 

THERAPEUTIC GAZETTE with AMERICAN LANCET 3.25 THERAPEUTIC GAZETTE with AGE and LANCET... 4.00

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136 Gower Street, London. Price 108. Remittances may be made either by Postal Order or Stamps.

Price to Foreign Subscribers direct (postage included), \$2.50 (10 shillings). English postage-stamps received on remittances.

Editorial communications should be addressed 222 South Fifteenth Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

Authors will receive reprints in pamphlet form, without charge, provided the request for them be written on the articles sent.

Business communications should be addressed to the Publishers.

#### Leading Articles.

CONCERNING CERTAIN HURTFUL ACTIONS OF COCAINE ON THE GORNEA.

T has long been known that cocaine, which powerfully influences the corneal nutrition, may cause wrinkling and drying of its epithelium, the amount of disturbance being in direct proportion to the strength of the lotion which is This phenomenon has been well described by many observers, and particularly by Jackson ("Transactions of the College of Physicians of Philadelphia," vol. ix. p. 169), who thinks that the corneal change is incipient in a large proportion of the cases in which cocaine is used, and that it will reveal itself if proper examinations are made. According to this author, the most delicate test of its presence is the regular astigmatism it causes, which may be recognized by the patient on account of the blurring of the test-types, or objectively studied with the retinoscope in the form of a delicate mottling of the pupil. Loss of the corneal epithelium has also been reported; but, as Jackson points out, the irregularity of the surface may be independent of this condition. A distinct haze in the epithelium and in the corneal tissue proper may develop if the instillations are repeated and if the exposure to the air is continued.

No doubt some of the unfortunate results which were at one time attributed to cocaine in cataract extraction.—for example, sloughing of the flap,—and which were ascribed to its depressing influence upon the nutrition of this membrane, were due to imperfect sterilization of the fluid, because it is well known that it readily accepts contamination, and that when but a few hours old, fungi and micrococci, easily demonstrated in the culture media, are abundantly present in the solution. The corneal opacity which occasionally follows cataract extractions, in some instances so great as to destroy the effects of the operation on visual acuity, and which has been attributed to cocaine, has been proved by Bunge, Wood-White, and other observers to be due to the fact that solutions of corrosive sublimate were used to cleanse the conjunctiva prior to the operation, the cornea having been anæsthetized with cocaine. More recently this subject has been studied in a capital experimental research by Mellinger (Archiv f. Ophthalmologie, xxxvii. 4, 159), who has demonstrated that the sublimate is the cause of the opacity, and that the cocaine favors the development of the clouding, inasmuch as it facilitates the entrance of the mercurial salt into the parenchyma of the cornea.

The same observer has recently contributed another research on the deleterious effects of cocaine in so far as this drug, in his opinion, is capable of preventing the primary union of corneal wounds. His paper ("Beiträge zur Augenheilkunde bei Anlass des 25 zährigen," Professoren-Jubiläums von Herrn Professor Schiess-Gemuseus, Basel, 1893) describes four cases, the first originally reported by Pflüger (Klinische Monatsblätter f. Augenheilkunde, 1886, p. 173), who three days after an extraction examined the eye and found the lids wide open, the dressings in contact with the diffusely infiltrated cornea, and the wound gaping. eye was lost and was enucleated. Mellinger contributes three cases of his own resembling the one of Pflüger, in this respect, that, under the influence of cocaine, there was long-delayed union of the lips of the corneal wound. Pflüger believed that the eye in his case was destroyed because the lids remained open and the dressings came in contact with the cornea. This, however, cannot be the explanation of Mellinger's cases, inasmuch as the abnormal opening of the wound, or rather the delayed union, occurred in eyes which were well protected by the closed lids. Therefore, to investigate this matter further, he has undertaken an experimental research, the object of which is to answer the question how incised wounds of the cornea heal with and without the previous use of cocaine.

It is unnecessary to review in detail the operations which were performed on rabbits' eyes. By comparing an eye in which, with a Graefe cataract-knife, a corneal flap was raised, the conjunctival cul-de-sac having been previously rendered anæsthetic with a five-per-cent. solution of cocaine, with one similarly wounded without such preparatory anæsthetic treatment, Mellinger was able to show that there were anomalies in the healing of the cocainized eye which were not present in its non-cocainized associate.

As the result of a number of experiments and microscopic examinations of the eyes, he finds that muriate of cocaine disturbs, in one-, two-, and five-per-cent. solution, the first firm union of corneal wounds; and, moreover, that this disturbance is in direct relation to the strength of the solution and to the quantity which is employed. It depends upon the hinderance of the development of a primary, lamellar woundclosure and the prevention of the formation of a "coagulation-support" in the parenchymatous portion of the corneal incision, because of the prejudicial effect of muriate of cocaine upon the corneal elasticity. Furthermore, the drug is responsible for poverty of lymph in the parenchyma of the cornea. As the result of all this, the primary closure of wounds in thoroughly cocainized corneas is effected by a pure epithelial closure, and this closure, lacking in firmness, readily separates and permits the gaping of the wound which has been noted.

In other words, as experiments have abundantly shown, both the ingrowing of the epithelium and also the parenchyma itself, the latter especially in the earlier stage of the condition, help to close a normal corneal wound. When this membrane is injudiciously anæsthetized by too frequently repeated instillations of strong solutions of cocaine, the closure largely consists of a pure epithelial plug, if it may be so expressed, which has little or no power of resistance, while the parenchymatous union, or what Mellinger calls the "coagulation-prop," does not manifest itself. Inspection of Mellin-

ger's beautiful plates shows at a glance the difference in the healing process. In the cocainized eye the lips of the wound are separated entirely by a mass of soft epithelial cells. In the non-cocainized eye an exactly similarly placed wound, while showing the epithelial ingrowing above and below, also exhibits the firm support given by a direct union of the parenchymatous tissues which have acted as a check to the further advance of the epithelial plug.

This interesting research—worthy of consideration particularly from the stand-point of histology-is not without its practical lessons. Ophthalmic surgeons have learned long ago the advantage of keeping eyes closed after cocaine solution has been instilled to avoid the wrinkling of the corneal epithelium noted in the beginning of this article. They have also learned not to employ vigorous lotions of germicides, particularly the bichloride of mercury. on a cornea rendered anæsthetic by cocaine, lest distinct opacity should result, and every now and then we read warnings against the frequent application of cocaine solutions preceding cataract extraction. Sufficient to anæsthetize the cornea is all that is required, and there is no advantage in the frequently-repeated instillations of strong lotions. Indeed, as Mellinger has experimentally shown, they may be the means of delaying union, and probably, if further researches should confirm his experiments, they explain some of the cases of this character which have been reported from the clinical stand-point.

#### A NEW TREATMENT OF SYPHILIS.

A COMMONLY-ACCEPTED theory of the day in regard to immunity seems to rest on the fact that micro-organisms produce not only substances which act injuriously upon the system of their host, but also certain products which are toxic to themselves, and which are able to render the soil in which they grow immune against new infection by the same microbe. The immunizing substance is found in the blood and tissues, but in some instances, at least, is excreted by the kidneys. Thus it has been shown by Bouchard that during typhoid fever there is a certain immunizing substance found in the urine.

In the clinical history of syphilis there are found strong reasons for believing that a similar substance may be carried either to the child through the mother's blood, or to the mother from the child infected by the father. This filtration of immunizing substance was known to Jenner. He observed that the children of mothers who had been successfully vaccinated during pregnancy were immune against vaccination. This fact has been confirmed by many other observers, and was experimentally proved on young lambs by Rickert.

Profeta showed that an apparently healthy child born of a syphilitic mother could not acquire syphilis from the lesions of the mother. Colles and Baumès observed, vice versa, that a syphilitic child born of an apparently sound mother could not convey the disease to her.

Besnier and Doyon explain on a somewhat different application of the same theory the escape of the husband, for instance, who is living in intimate relations with a wife profoundly infected with lepra.

Bonaduce holds that, particularly in syphilis, and consequently in other bacterial diseases, immunity by filtration of protective serum through the placenta would be conveyed far more frequently than is the case were it not that through hemorrhages or traumatisms the indirect communication between the maternal and foetal blood is made direct, and not only the immunizing substance, but the active living micro-organisms are carried from the diseased to the healthy being, and thus, in place of protection against syphilis, syphilis itself is implanted.

When the virus of syphilis has once entered the feetus it finds every condition favorable to its development, and it is prone to manifest itself in a severe form. In consequence there is a large production of the immunizing substance which is filtered through the placenta.

This filtration of immunizing substances has been carried on experimentally in the case of diseases the micro-organisms of which have been isolated and cultivated. This, however, is impossible with syphilis, since its specific microbe has not yet been found, although no one doubts that it is an infectious disease and conforms to the laws of maladies of this type. Hence there is every reason to believe that there is an antitoxine produced by the microbe, which, for instance, conveys immunity through life to those who once have had syphilis.

Bonaduce states that in consequence of this antitoxine the infected organism is so altered in its biochemical relations that it becomes refractory to further infection on the part of the specific microbe. Hence it seems reasonable to suppose that after the contagious secondary period is past there will be found in the blood and fluids of the body those chemical sub-

stances which convey immunity. It is well known that the quantity of antitoxine required to convey immunity is extremely minute; this has been clearly shown in experimental work.

The difficulty in the practical application of these facts lies in determining the exact period in which this antitoxine is found most abundantly in the circulation. Moreover, the serum of the infected organism contains, in addition to immunizing substances, certain poisonous compounds which act injuriously upon the tissues, lessening the resistance, and thus encouraging proliferation of micro-organisms. Bonaduce holds that if it were possible to accomplish artificially what nature does in the case of the mother,—that is, immunizing against syphilis, in accordance with Colles's law,-the Gordian knot of syphilitic therapeutics would be cut. Since the kidneys are functionless in intrauterine life, and since the micro-organisms of syphilis exhibit special virulence when they attack the fœtus, there should be in the circulation of the child at birth both immunizing substances and toxic products in unusual concentration.

To separate these from each other heat may be employed, since it is well known that the toxines are destroyed while the antitoxines remain intact. Gamaleia, Arnaud, and others have shown this in the case of other microbes.

On the basis of these considerations Bonaduce (Monatshefte f. Prak. Derm., Bd. xvii., No. 3) has conducted a clinical study. Blood was drawn from three children born with all the characteristics of hereditary syphilis. This was allowed to stand for a day on ice, and from it thirty-five cubic centimetres of serum were obtained, to which one hundred cubic centimetres of sterilized water were added. This mixture was heated for ten minutes to 100° C., and was filtered.

A patient, thirty-two years of age, who had exhibited for eighteen days a characteristic chancre in the coronary sulcus, and whose inguinal glands were typically enlarged, received injections of this serum in the subcutaneous cellular tissue. These were conducted with all aseptic and antiseptic precautions, and the injection fluid was kept aseptic. There was no inflammatory reaction excited. In all, twelve injections were given in twenty-four days; about ten cubic centimetres were administered at each injection.

During this treatment the glandular enlargements subsided and the ulcer grew steadily better, although no local treatment was employed. After thirty-five days the ulcer was completely healed and the inguinal adenitis was markedly lessened. The treatment was begun the 13th of November, 1892, and at the time of the report (the 23d of June, 1893) the patient was well, and on the most minute search showed absolutely no signs of syphilis.

It is suggested that blood may be used from the placenta of a syphilitic child, or may be taken from individuals who are at the height of secondary syphilis, but in all cases the serum should be employed with the most minute antiseptic and aseptic precautions.

In Italy, Tommasoli has some time since proposed a method of hæmo-therapeutics in the treatment of syphilis. This consists in the injection of serum derived from the blood of lambs or calves, the practice being based on the theory that since these animals are immune to the disease, their body fluids must contain some immunizing substance.

Fournier has obtained some results from injections of the blood-serum of the dog and horse, and Pellizzari has expressed the hope that by the injection of the blood-serum of syphilitics who are in the transitional period between the secondary and tertiary stages of development all secondary lesions may be prevented in those who are suffering from chancre.

The idea of the treatment of syphilis by injections with blood from animals naturally immune, or by injections of serum free of its toxic properties and supposed to contain the antitoxine of syphilis, introduces an absolutely novel feature in the therapeutics of syphilis. Already numbers of successful cases have been reported. Experience has shown, however, that little confidence can be placed in this. The case contributed by Bonaduce is not conclusive, since the diagnosis was by no means established in the first instance.

The treatment seems rational, has been evolved from the result of the thoroughly confirmed laboratory researches conducted by many distinguished observers, and is worthy of extended trial, since it cannot possibly injure the patients. If it replaces mercury and the iodides by at once curing the disease it will mark an epoch in medicine as noteworthy as that recalled by the name of Jenner.

### NITRATE OF SILVER IN DISEASES OF THE STOMACH.

THE readers of the THERAPEUTIC GAZETTE have had an opportunity during the past year of reading a considerable amount of valuable literature contained in the Original and

Progress columns of the Therapeutic Gazette upon the treatment resorted to by various clinicians in certain gastric affections. The articles of Dr. Stewart have brought before the physician's mind the great value of lavage and of the methods of determining the character of the stomach contents in order that the treatment instituted might be rational. In an article upon "Certain New Methods in the Treatment of Gastric Affections," which was abstracted in our Progress columns of September, having been contributed to the New York Medical Record by Boas, of Germany, this author dwelt upon the value of diet, rest, Carlsbad salts, and hot hydrotherapeutic measures, leaving the question of lavage in the background. It will be remembered that Boasstrongly recommended the employment of nitrate of silver in ulcer of the stomach, claiming that better results were obtained from the administration of this drug than from any other remedy which we could administer. He emphasized the fact that the common method of administering nitrate of silver to these cases in pill form was an error, as he thought that better results were reached by using a solution. He also believed that to get the best effects it was necessary to use the nitrate of silver in gradually-ascending doses, as, for example, taking a 3-ounce mixture of a definite strength in the dose of a teaspoonful for one week, 2 teaspoonfuls at a dose the next, and 3 teaspoonfuls at a dose the third week. He directed, too, that in order to relieve the patient from the disagreeable taste in the mouth, it was well to order a gargle of salt and water, which should be used after each dose until the liquid expelled from the mouth was no longer cloudy from the presence of chloride of silver. Both Boas and ourselves recognize very thoroughly that the nitrate-of-silver treatment of this condition is by no means new, and, as pointed out by Boas, it was first resorted to in the treatment of pain in the stomach, which may or may not have been due to ulcer, as long ago as 1827.

Our object is to state our entire confidence in the method recommended by Boas, although we must confess that we have always employed the nitrate of silver in pill form in preference to the solution; neither have we considered that ascending doses were as necessary as he seems to think. Leaving the question of diet and absolute rest to one side, we believe that ¼ grain of nitrate of silver, given one hour before taking any food or liquid into the stomach, except that which is taken to aid in the swallowing of the pill, has produced in many of these cases extraordinary improve-

ment. For the pain or gastric discomfort nearly always present, a good preparation of the extract of hyoscyamus is a valuable adjuvant to the silver salt. Indeed, in some cases, we have been inclined to attribute the improvement in symptoms quite as much to this vegetable drug. as to the derivative of the mineral kingdom. The matter of administering the drug an hour before eating is most important not only that the drug may act upon the gastric mucous membrane or ulcer without interference upon the part of food, but also because it is a substance so readily decomposed. We are well aware that bringing small quantities of nitrate of silver in contact with organic matter of any kind rapidly produces decomposition of this comparatively unstable salt, and theoretically it is doubtless true that nitrate of silver is changed so rapidly as to scarcely be able to act as nitrate of silver. Practically, however, the results obtained in a large number of cases by many practitioners have proved the clinical fact that it is one of our most reliable drugs. In other conditions of the stomach, chiefly in chronic gastric catarrh, in which a short time after eating there occurs a good deal of heartburn, nitrate of silver combined with hyoscyamus seems to be an even more valuable drug than some of the alkalies. Particularly does it seem of value in those cases where pressure over the epigastrium produces tenderness, or where the clothes are habitually very loosely worn about the abdomen, because any pressure exercised by them results in discomfort. In some instances it is necessary to increase the dose from 1/2 grain three times a day to ½ grain three times a day. The pill, if the drug is used in this form, should always be freshly prepared and readily soluble. The best dose of the extract of hyoscyamus to combine with the nitrate of silver is ½ grain.

#### Reports on Therapeutic Progress.

#### THE TREATMENT OF YELLOW FEVER.

SALICRUP has an article in the Medical Record upon this topic. He believes that when called to a case of yellow fever in the first day of the disease, 10 to 15 grains of calomel, followed by a saline cathartic three hours afterwards, should be prescribed, and as soon as the cathartic effect begins the patient should take a cupful of hot lemonade, with 5 to 10 grains of bitartrate of potassium every hour until abundant perspiration is produced; this is to be kept up by the constant use of lemonade and confine-

ment to bed for two or three days, at the end of which time the fever generally subsides and in many cases convalescence is established. No food is given during these days, and nothing but small pieces of ice in the mouth is allowed to quench thirst. In cases in which convalescence is not established at once, the symptoms of the third stage appear after twelve to twenty-four hours, but generally they are less severe and the majority of cases recover.

In the first epidemic the author attended in 1875 this treatment was so successful that he had a mortality of only about ten per cent. among his patients, who were sailors, and were attended on board the vessels lying in port, while in the hospitals on shore they were having a very heavy mortality under different treatment. In subsequent epidemics he did not find this treatment so effective, but it was always superior to any other when applied early in the disease.

When the disease advanced into the third stage the symptoms were treated on general To prevent or check vomiting, principles. pieces of ice swallowed entire, iced champagne, effervescing mixtures prepared with fresh lemonjuice, sulphuric and hydrochloric lemonades, and diluted hydrocyanic acid proved useful in many cases. The salicylates of sodium and potassium, benzoate of sodium, and quinine have been used in cases of the inflammatory type. Castor, musk, or other antispasmodics are sometimes indicated when the nervous system is much disturbed. When the stomach is tolerant and stimulation is required, alcohol and extract of cinchona bark combined is a very useful preparation. Having in view the parasitic origin of the disease, almost all known antiseptic substances have been used internally, but without any marked influence in the course of the disease.

Besides the drugs mentioned, others have been used to meet indications. In some cases of obstinate vomiting or frequent bloody stools, the preparations of ergot and other hæmostatics have been employed with variable success; digitalis, scilla, and other diuretics have been given in cases in which the suppression of urine was a troublesome symptom. In cases in which heart-failure threatened, digitalis, caffeine, and other heart stimulants were used by the mouth or hypodermically. The diet in this stage is iced milk and beef-tea, if the stomach tolerates In cases of recovery, convalescence is slow and protracted, even in cases in which the disease only goes through the first stage, and the patients remain in a state of chloroanæmia, which takes long to disappear.

Salicylic acid and its preparations are said to have been used successfully as a prophylactic of the disease by some captains of merchant vessels, who administered the acid to their crews in 5-grain doses three times a day.

From what has been said the following conclusions may be drawn:

- 1. That yellow fever is an epidemic disease, which has a tendency to become endemic in localities in which favorable conditions for the development of its causative germ exist.
- 2. That it is of bacterial origin, although the precise bacillus which causes it has not yet been demonstrated; neither has it been as yet discovered whether the water, air, or articles of food used in the infected localities are the conducting media of contagion.
- 3. That it is probably contagious and infectious, although unacclimated persons and newborn children seem to be more susceptible to the disease.
- 4. That the blood seems to be most affected, the poison destroying its plastic elements, and it is in consequence of this that the other organic pathological changes which are found in post-mortem examinations are effected.
- 5. That the disease is more or less severe in different epidemics, according to the form it assumes, and this depends on the different hygienic and meteorological conditions of the affected locality at the time.
- 6. That there is no specific remedy for it, but that a treatment which promotes abundant secretions of the skin and bowels, if early and judiciously applied, often checks or modifies its course.

### THE LANCET'S CHLOROFORM COMMISSION.

The following summary in the Lancet of the important work of the Lancet's Chloroform Commission is of interest:

Our commissioner believes, and a perusal of the cases appears to justify his statement, that many of the fatalities which occur under anæsthetics are preventable, and arise through the want of experience of those who undertake what, after all, is a very serious responsibility, the administration of an anæsthetic. The task is frequently intrusted to a young house surgeon or senior dresser, who, not altogether unnaturally, is apt to watch the operation rather than his patient. That our report has not finally settled all the questiones vexatæ is not, in the nature of things, to be wondered at, although we think we may safely say it has prepared the way for a future settlement. The evidence adduced by the Hyderabad Commissioners concerning the absence of primary syncope in chloroform toxemia has not been found to be wholly supported by the conclusions of our commissioner. He contends that the finding of the committee of the Royal Medical and Chirurgical Society is supported by the evidence advanced in our reports. Death under chloroform, it was alleged, occurred in man usually from failure of respiration, although the precise pathology of this collapse of a vital process was, in the absence of direct evidence, purely conjectural. But in some instances deaths from direct cardiac failure, of which the pathology is again uncertain, are said to occur, and our commissioner, while he maintains that very many of the cases assumed by the reporters to be purely syncopal are really. respiratory, believes that a considerable number of them are to be found among those which we have collected and published. Our aim has been to collect and arrange facts rather than to dogmatize, and our commissioner has acted upon this line; the facts are now before our readers, and it is for them to draw their conclusions. To render this reference more easy we propose to reproduce "The Report of the Lancet Commission appointed to investigate the Subject of the Administration of Chloroform and other Anæsthetics from a Clinical Stand-point" in pamphlet form. If no other purpose were served by our report than to direct attention to the really small death-rate under anæsthetics when properly and carefully given, our labor would not have been thrown away; but we believe that very much more will follow, and it is, we hope, not too much to say that when the clinical and the physiological aspects of the question can be carefully compared, and when those who support the views appropriate to each school of thought can together trace the teaching of the two sets of facts, we may at length arrive within measurable distance of a solution of what is, perhaps, the most important question of modern surgery.

TWO CASES OF POISONING BY THE SELF-ADMINISTRATION OF "DIACHYLON"— LEAD-PLASTER—FOR THE PUR-POSE OF PROCURING ABORTION.

POPE, in the *British Medical Journal*, records two cases of lead-poisoning from diachylon plaster; both terminated fatally; and as it is probable that a practice exists in some places of taking the drug for the above purpose, it seems desirable to give publicity to the facts

with a view to the prevention of similar tragic results.

CASE I.—A. A., aged thirty-three, was admitted into the Leicester Infirmary on September 10, 1890. She complained of pains in the bowels and loins. She was married, had four children, and had had no miscarriages. She had had similar attacks three times in the last twelve months. The present illness commenced with very sharp pains in the right iliac region, constipation, and vomiting after food. She was treated medically for this and the pain got better, but a feeling of soreness remained in the abdomen. skin and conjunctivæ were yellowish; the tongue furred; the bowels confined. catamenia had been absent six weeks. There was a distinct blue line around the gums; the hands were tremulous and the wrists very weak. There was pain in the abdomen and tenderness on pressure over the left iliac region. She drank tap-water from a constant service. A diagnosis of lead-poisoning was made, and she was treated with iodide of potassium. Three days afterwards she became comatose. and died in a few hours without recovering consciousness.

At the necropsy, beyond the fact that the intestines were contracted, no abnormal signs were discovered after a careful examination. The brain especially appeared quite healthy.

The coroner was communicated with and an inquest held. All efforts to trace the source of the lead-poisoning failed. The water-supply at the deceased's home was carefully examined. It was the usual excellent constant supply of the borough, and analysis failed to show any trace Information as to her usual diet did not indicate that she was in the habit of using substances liable to contamination with lead. The verdict of the jury was that the deceased died from lead-poisoning, but that there was no evidence to show how the poison was taken. For his own satisfaction the writer incinerated a considerable portion of one kidney, and obtained unmistakable evidence of the presence of lead in the ash.

Many weeks afterwards the practitioner who had seen the deceased before her admission to the infirmary informed me that it had been reported to him in a roundabout and hearsay manner that the deceased had told some one that she had been advised to take diachylon, either to prevent conception or to procure abortion. This explained the case, if true; but as everybody concerned was extremely reticent, and as the coroner who had conducted the inquest had died in the interval, it was decided, rightly or

wrongly, to take no steps to have the verdict of the jury revised. The above events were nearly forgotten, when, in August, 1892, a patient was admitted who subsequently proved to be a victim of the same practice.

Case II.—A. W., aged twenty-two, married, hosiery hand, admitted August 2, 1892. She was anæmic; the skin and conjunctivæ were of a yellowish tint. She seemed of weak intellect, though not formerly so; had a fatuous expression, and would not speak above a whis-She complained of pain in the abdomen, principally in the right iliac fossa, and attributed her symptoms to a miscarriage which occurred in May last. Her health before her marriage, three years since, was good. had had two children, both of whom died in infancy, and two miscarriages. At the last, in May, 1892, she lost a good deal of blood, and since that time had been suffering from pains, and had had no return of menstruation., There were no abnormal signs in the lungs, heart, or abdominal viscera, and no signs of syphilis. There was pain on pressure over the hypogastrium. The bladder was distended. On vaginal examination nothing abnormal was found. The rectum was loaded with fæces. The urine (specific gravity 1015) was of a dark-reddish color, but contained no blood, albumin, bile, or sugar. The limbs were weak, but she could move them all; the deep reflexes absent; sensation was unimpaired. The bowels were relieved by enema, and the urine was then passed naturally. After remaining in about the same condition for a week, she had an epileptiform convulsion on the night of August 8. tongue was bitten; the bladder found again distended. On the morning of August 9 there was complete loss of power in the arms and legs, and fæces were passed involuntarily. The condition was thought to be due either to tuberculous meningitis or a cerebral tumor. August 10 she had several more convulsive attacks, was continually crying out, and rolling her head from side to side. The paralysis had extended to the diaphragm; this caused suspicion that her condition might be due to peripheral neuritis, and inquiry was made from her friends as to the possibility of diphtheritic poisoning, but no history of sore throat could be elicited. The faradic current was applied to the diaphragm, but she died at 8.45 A.M. on August 11.

At the necropsy the brain was carefully examined and nothing abnormal could be found. All the organs of the body were found healthy, with the exception of the intestines, which were contracted and contained a yellowish, sticky

fluid in considerable quantity. The uterus was of normal size; the lining membrane healthy. There was no corpus luteum in either ovary. There was a well-marked blue line round the gums, which had been inconspicuous before death.

Death was considered to have been due to lead-poisoning, and an inquest was held. An aunt of the deceased gave evidence that some weeks before her death the deceased had pointed out a chemist's shop and said, "That's where I get the stuff I take;" and in answer to a further question as to what stuff she meant, replied, "Diachylon." Witness said, "I thought that was poison;" and deceased answered, "Well, it does not poison me. I get two pennyworth and make it into pills, so I can swallow them." She also gave witness to understand that she took it with a view of producing abortion. Under the direction of the coroner the verdict of from taking a drug for a felonious purpose was returned.

It is not the intention to enlarge on these cases from a symptomatic point of view. symptoms in the first case were fairly characteristic of lead-poisoning, and in the latter, though less so, they yet present no very novel features. The striking point about the two cases is the occurrence of two deaths in a period of less than two years from the self-administration of a drug not usually employed as an internal remedy. It is probable that these two unfortunate women are by no means the only ones who have availed themselves of this supposed ecbolic, the presumption being that the occurrence of two such cases in one town points to a somewhat wide-spread superstition as to the powers of the drug, and from a public point of view chemists ought to be exceedingly careful in supplying this substance in future. It seems as reasonable, indeed, that all poisonous articles, for whatever use intended, should be labelled "poison," as that another class of commodities should be marked "made in Germany," and the sooner a regulation to that effect can be enforced the better for the public.

A more academic, but no less interesting, question raised by these cases is the following: How did diachylon come to have the reputation which led to its internal employment? For some time this appeared quite unanswerable. The writer is now, however, able to offer a suggestion on the point. The explanation does not seem to be entirely adequate, but it suggests a possible origin for the custom.

Diachylon is a plaster as old as Galen's time, and older, but it had not then its present sim-

ple constitution. It contained, in addition to litharge, marshmallow, linseed, and fenugreek, and may have had this composition till comparatively late times. Hippocrates recommends lint-seeds among other things as an emmenagogue, and Pliny and many others say that fenugreek is an ecbolic. Old superstitions die hard. Is it possible that we are dealing with one dating from the time when diachylon contained these drugs, and that it then had a reputation as an ecbolic which has been transferred to its successor in the Pharmacopæia? There is another plaster mentioned by Paulus Ægineta similar to diachylon, containing marshmallow, linseed, fenugreek, and, in addition, resin, tears of ivy, and turpentine, but no litharge. Is it possible this was also known as diachylon, and, being comparatively harmless, was used as an emmenagogue?

SOME CONSIDERATIONS BEARING ON THE TREATMENT OF PNEUMONIA.

WASHBURN, in the Journal of the American Medical Association, publishes a paper on this important topic.

The conclusion seems forced upon him, by recent investigations as to the comparative mortality in cases of pneumonia, that the deathrate from this disease is on the gradual increase, and has been on the increase since 1822.

When we eliminate all elements of uncertainty and unfairness in the comparative statistics of various hospitals and institutions, we are compelled to admit that if the death-rate has not actually very materially increased, it has not been reduced by our modern methods of treatment. Those methods of treatment differ very markedly from those in vogue during the first sixty years of this century. The best authorities during that period insisted that in this disease bloodletting was "a remedy of indispensable necessity," and they were almost equally unanimous in their use of cathartics, blisters, and occasionally emetics.

Subsequent to 1860 our treatment has been greatly modified, being less active and heroic, and styled expectant. This expectancy consists in doing little or nothing during the first stage of the disease, unless the temperature ranges high and the cough becomes harassing, when antipyretics, such as large doses of quinine, veratrum viride, and later the newer antipyretics of the antipyrin order are given with opium to allay cough. Later in the course of the affection, when the heart begins to show evidences of failure, alcoholics have been chiefly relied upon, being strongly recommended in

all the recent text-books to which the author has had access.

When we bear in mind these striking differences in method of treatment in connection with the fact that the death-rate has increased, or, at least, has not decreased, under the newer system, which state of affairs cannot be accounted for on the theory of change in the type of the disease, the conclusion seems forced upon us that there is something wrong somewhere.

A recognition of this fact has resulted in the production of a considerable volume of current literature bearing upon the subject of treatment. Those who have thus written may be divided into three classes: First, those advocating a return to the methods of our fathers; second, those advocating the free use of such remedies as veratrum viride, aconite, tartar emetic, etc., in the early stages of the disease; and, third, those advocating expectancy,—that is, little or no treatment in the first stages, and alcoholics when evidences of cardiac weakness supervene, and perhaps cold externally for the reduction of excessively high temperature.

If we can believe the advocates of these different methods of treatment, pneumonia is the simplest of diseases to treat, the first two classes claiming to abort nearly all their cases in the first stage, and the third to conduct nearly all their cases to a favorable issue. Nevertheless, the mortality-rates are before us; in view of which, and our individual experience with the disease, we are compelled to accept these statements with a very large grain of salt.

As to venesection, it may be admitted that good may sometimes result in certain cases. The advocate of bloodletting has this in his favor, that with the blood withdrawn there escapes a certain amount of toxalbumin; and the amelioration which it is claimed often follows the operation is probably due to this fact rather than to any relief which the right heart may receive by reason of a temporarily reduced total quantity of blood in the vessels, the modus operandi of venesection in this case being the same as in uraemic intoxication, where marked temporary relief often follows the operation, by reason of the coincident removal of uræmic poisons with the blood. this supposition the fact would be explained that venesection is indicated, as its advocates claim, in all stages of the disease.

The veratrum viride treatment has always seemed to me to be unscientific and illogical from whatever point of view we regard it, and only capable of doing harm.

The immediate effect is increased rapidity of

the pulse and respiration. This appears to be directly due to the action of the superheated blood upon the cardiac muscle and upon the respiratory nerve-centre; and this is the very thing necessary to increase heat dissipation and thus prevent a further rise in temperature. If, by means of such an agent as veratrum viride, we succeed in reducing the pulse-rate to sixty or less per minute, it may be well doubted whether any good has been accomplished. On the contrary, in view of the impaired action of the heart which we look for later in the course of the affection, the fact can never be lost sight of that drugs of this nature may add to the dangers under which the patient already suffers, and may be the determining lethal factor in what otherwise might be a favorable case.

We can never treat pneumonia truly scientifically until we are able to strike at the *materies morbi* of the disease, destroying the pneumococcus in the alveoli or antidoting the pneumotoxin in the blood.

This we are yet unable to do, and hence our efforts will be palliative only.

The objects, then, to be accomplished are the increase of nervous sensibility and the elimination of the specific poisons of the disease and the products of retrograde metamorphosis. We have seen that the treatment almost universally recommended under these conditions of obtunded nervous sensibility has been alcoholics, freely and often administered, in order to stimulate the nervous system to renewed activity.

Alcohol has always enjoyed the reputation of being a stimulant, but the writer disbelieves this, and is firmly convinced that this view of the question ultimately will prevail. Symptoms of this are becoming more and more numerous every year. The most commonly observed effects of alcohol are all sedative. Samuel Wilks enumerates these effects at some length: The dilated capillaries from vasomotor paralysis, the semi-stupor sought by those who "drown their sorrows in the flowing bowl," the forgetfulness of evil done or wrongs sustained, the insensibility to cold and other unpleasant external impressions.

Cosgrove, reviewing the experimental work done by Ridge, Lauder Brunton, Parkes, B. W. Richardson, Prout, Fife, Vierordt, Smith, Perrin, Lehman, and others, says that, contrary to what has been and is supposed, they found that small doses of alcohol produce from the first a narcotic rather than a stimulant effect. That all these observers, with the exception of Smith, also found that alcohol in small doses diminished the amount of carbon dioxide exhaled.

H. C. Wood, before the International Medical Congress in 1890, said that his doubts as to the stimulating effects of alcohol on the heart during anæsthesia had grown stronger and stronger for the past ten years, and that his own experiments showed that alcohol does not increase the size of the pulse or arterial pressure, but rather appears to increase the rapidity of the fall of arterial pressure, and thus hastens death.

N. S. Davis summarizes the physiologic effects of alcohol as determined by very many and elaborate experiments by many experimenters, including himself, as follows:

In doses of any size, from the least to the greatest, it is an anæsthetic, lessening nervous sensibility to all external impressions,—heat, cold, weariness, despondency, weakness, pain; it also diminishes the oxygen-carrying power of the red blood-cells, thus materially interfering with the process of katabolism, thus impeding nature rather than aiding her in the elimination, not only of the ordinary products of retrograde metamorphosis, but also of those foreign disturbing elements which constitute the poisons of disease.

Experiments with alcohol on digestion are no more favorable to its use in cases of pneumonia than those already mentioned. Blumenear says that, as a result of a long series of experiments with alcohol on digestion, he has proved that the functional activity of the gastric juice, its general acidity as well as amount of hydrochloric acid present, and its corresponding digestive powers, are diminished, and that this diminution of power is relatively greater in persons not accustomed to the use of the drug; also, that the motive power of the stomach and its capacity for absorption are diminished in direct proportion to the strength of the alcoholic solution.

If these conclusions as to the physiologic action of alcohol are warranted by the facts, we are justified in the conclusion that its use in cases of pneumonia is illogical; that it is utterly incapable of doing good; and that it is largely responsible for the high mortality-rates in this disease.

We ought, therefore, to abandon the use of alcoholics in the condition in question, and extend our observations in other directions in order to ascertain whether we are in possession of a therapeutic agent from whose physiologic action we have any reason to expect aid in the accomplishment of the objects to be attained,—namely, the increase of nervous sensibility and the elimination of the specific poison of the disease and the products of ret-

rograde metamorphosis. We have such an agent in strychnine.

There appears to be no difference of opinion as to the action of this drug. By its administration the sensibility of the nervous system is heightened in every part,—not only the cerebro-spinal system, but also the sympathetic. It acts as a stimulant on the respiratory nerve-centre, upon the cardiac ganglia, and increases the sensibility of the nerves of special sense, touch, sight, hearing, and also increases the activity of the olfactory sense. Its stimulant action on the involuntary muscular system is witnessed in its increase of intestinal peristalsis and in increased force of uterine contractions when the drug is administered in the progress of parturition. It increases the mechanical movements of the stomach as well as the amount and acidity of the gastric juice, thus assisting the process of digestion, and at the same time there is an increased action of the kidneys, witnessed by an increase in the quantity of urine eliminated.

We have, then, in strychnine a drug which in its action is diametrically opposed to alcohol, and one which is above all others, by reason of its physiologic action, indicated in the treatment of pneumonia at the stage which we are considering, but which, so far as the writer is able to judge from text-books and-current literature, has as yet received but little recognition; and it is the purpose of this paper to urge the abandonment of alcohol as a stimulant in this disease, and offer strychnine as one substitute therefor.

### TREATMENT OF PNEUMONIA WITH LARGE DOSES OF DIGITALIS.

When first used in the therapeutics of pneumonia, digitalis was prescribed as an antipyretic, but this has been wholly abandoned. Later it was used as a heart-tonic to prevent collapse, and is still so applied. The daily amount given in such cases never exceeded the generally-accepted maximal dose of (.6) 9 grains a day.

But in 1888 Petresco appeared in print with the claim that large doses (4 to 8 grammes, or 1 to 2 drachms a day), in the form of an infusion, would prevent the progress of pneumonia and shorten the course of the disease. According to him, the digitalis in large doses was a specific for pneumonia. He reported eight hundred and twenty-five cases treated in this manner, with the very small mortality of 2.06 per cent.

Staff-Physician Fikl tried the treatment, and

reported in 1891 over sixty cases, with only one fatal one, and fully agrees with Petresco. In 1893 he further reported one hundred and eight cases so treated, with only one death. Dr. Löwenthal reported in 1891 twelve cases successfully treated in this manner in the general hospital at Vienna. Dr. Siegf. Reiner (Wiener Medizinische Wochenschrift, Nos. 39 and 40, 1893) continued the trial of it in the same hospital, and now gives a careful report of twenty-four cases, with tabulated reports showing the dose, temperature, pulse, and respiration. Only one out of the twenty-four died, and that was a woman brought to the hospital She was not given the largest in collapse. dose. Dr. Reiner claims that a careful study of the tables he gives shows conclusively that digitalis in large doses is not a specific for pneumonia. He reminds us that Staff-Physician Fikl has for his patients strong young men, while the material under observation at the city hospital of Vienna is the worst possible,-old feeble men and women, afflicted with chronic lung-troubles, with heart-muscles and vessel-walls defective from drinking, hard work, and syphilis. That such good results are attained from this material shows how little need there is for a therapeutics of pneumonia, and how little it is influenced by any therapeutics used, and that it is cured by every, and, as Strümpel says in his book, in spite of every, therapeutics.

The digitalis neither hindered the advance of the disease nor shortened its course, but rather protracted it. There was no favorable influence upon the temperature. The pulse was not diminished in frequency. The effect on the respiration was not regular enough to draw any conclusions from.

Reiner thinks that, instead of preventing collapse, it caused a slowly-advancing one which lasts a long time. The facts show that the usual doses of digitalis may be exceeded without any danger.

However, to continue this treatment for a considerable time is not without danger, as was shown by the poisoning which occurred in one case after the doses had been given three days. This patient was doubtless specially sensitive to it, but such a case shows that the large doses must be used with caution.

#### THERAPEUTICS OF DYSENTERY.

For few diseases, are there so many remedies proposed as for dysentery, and yet for severe cases all have failed, and many physicians have thought there was no remedy which could

be relied on. Having seen great numbers of dysentery patients, during a practice of twentytwo years in Constantinople, Dr. S. Schwarz (Internationale Klinische Rundschau, No. 56) thinks he has found a perfectly reliable remedy. The Oriental population of that region consult. for many ailments, not regular physicians, but priests, wise women, or empiric doctors, who have inherited the healing art from father and grandfather. Dr. Schwarz tried for years to learn what these people gave for dysentery, and learned at length that they used chiefly roses, the rind of the pomegranate-root, and The latter are the fruit of a myrobalanen. tree indigenous to India, - Terminalia Chebula. Willd. After trying these remedies, both separately and combined, for some years, Dr. Schwarz finally combined partly their powder and partly a chemically pure extract and alkaloid in pills of the following composition: Myrobalanen, pelletierin, extract. graminis, extract. granati, and acacia.

This prescription he has now used for three years for all patients suffering from dysentery or chronic diarrhœa, and the results were even beyond all expectation; among hundreds of cases, not a single one but was cured. He gave these pills to his colleagues at home and abroad in Egypt, India, and all found their action favorable.

The difficulty was that he either had to prepare the pills himself or have them made under his immediate supervision, because the myrobalanen has to be very carefully selected, and then the purging substance removed by a very careful and complicated process.

The patient receives three pills three times a day. For those who cannot swallow pills, he has thirty-six pills rubbed into a powder, which he also uses for children, giving them, according to their age, one-half or one-third as much as grown persons. The diet is of rare roast meat (broiled is better), skimmed meat-broth, with well-cooked rice, sago, or grits, or bouillon with yolk of egg. For fluid, boiled and then cooled water, some red wine, with or without water, and weak tea or coffee. The use of milk must be strictly prohibited during the treatment and for a few days longer. The patient feels better on the second day, and by the fourth day is as well as usual. The diet should be kept up for from six to eight days.

ON THE PULMONARY ELIMINATION OF CERTAIN MEDICINAL SUBSTANCES.

From an interesting experimental study of the above subject, PAUL BINET (Rev. Méd. de la Suisse Romande, 1893) draws the following conclusions:

- 1. The elimination of sulphuretted hydrogen is feeble, very rapid, and of short duration.
- 2. In the case of ammonia and trimethylamine, doubtful traces are found in the expired air, but generally the results are negative.
  - 3. With iodine the results are also negative.
- 4. The elimination of alcohol, aldehyde, and acetone is feeble and also rapid after large doses.
- 5. That of ether is decided and appears to be of great importance.
- 6. With the essence of turpentine and terpinol traces are found in the expired air about three or four hours after the ingestion of the medicaments by the stomach.
- 7. The same may be said in regard to eucalyptol, but its appearance in the expired air is more rapid.
- 8. The elimination of balsam of copaiba and the extract of cubebs is insignificant or *nil*.
- 9. The results obtained with camphor and menthol are similarly negative.
- ro. Inappreciable traces of creosote, oleocreosote, and guaiacol are found in the expired air, even after large and toxic doses, notwithstanding the presence of small quantities of the medicaments found in the lungs.

The author affirms, finally, that the pulmonary elimination of the majority of the substances examined is feeble or nil. This might be explained by the degree of volatility of these bodies and the readiness, more or less marked, with which they are absorbed by the transformations which they undergo in the organism and by the preponderance of other modes of elimination.

#### THE TREATMENT OF INEBRIETY.

DR. CROTHERS, of Hartford, who is so well known as a student of inebriety, has an article upon this subject in the Medical Record. After placing emphasis upon the fact that it is practically a disease with which we are dealing, he goes on to say that the first question that confronts the physician when called to a case is, What is the present condition and what can be used to alleviate it? All inebriates suffer from degrees of paralysis, both vaso-motor, sensory, There is present always funcand functional. tional palsy and subacute inflammation that is generally local. The heart is enfeebled and The liver is congested and often enlarged. the seat of a low grade of inflammation. stomach is palsied and often acutely inflamed. In cases of long standing, neuritis of the nerves of the extremities in a greater or less degree is

present. The first treatment is preliminary, and should begin with a warm bath and thorough rubbing to counteract the vaso-motor palsies of the cutaneous veins and arteries. One of the marked effects of these palsies is to retard and prevent elimination of waste matter through the skin. As a result, new sources of danger arise from the chemical decomposition of waste effete matters retained in the system. Ptomaine-poisonings and new sources of irritation, new soils for the growth of bacteria, appear.

The bath is simply a cutaneous stimulant to aid in the elimination of these products. After the bath comes what is termed internal lavage or washing, based on the same reason,—viz., that of eliminating the poisonous products which are formed by the paralysis, both functional and organic.

This lavage is best secured by a saline or mercurial cathartic and copious draughts of warm or acid waters. For the nerve paralysis and irritation the various forms of bromide seem sufficient. Large doses of 100 grains at a time are most practical. Of course all spirits are removed at once, and for another purpose, to uncover the real causes which may be masked behind and appear when the spirits are removed. If profound collapse and acute delirium follow this treatment, some form of concealed preparation of opium, usually the deodorized tincture in cinchona bark infusions, should be given. This is withdrawn as soon as possible and the bark preparations continued. If digestion is seriously impaired, nux vomica, in 1-grain doses, is useful.

In this preliminary treatment salines, mineral waters, and fruit acids are the common associated remedies. Rest in a recumbent position and passive exercise from massage, together with restraint, are all-important. During this preliminary treatment a study of the physiological and pathological history will indicate the causes most active in the craze for spirits. When they are traceable to syphilitic poison and general exhaustion from bad living, a long course of mercury and arsenic, with total change of life and surroundings, are indicated. When the first causes are clearly head injuries, and a slow degeneration from subacute inflammations and other obscure brain- and nerve-changes appear, very active constitutional treatment, with changes of living, are essential. Baths, diet, mineral and acid tonics should be alternated with bark infusions. Where traumatism is a distinct cause, all treatment should be based on the prognosis of serious present and future brain-trouble.

A CASE OF POISONING BY CHLORALOSE.

In the *British Medical Journal* is the report by Dr. Lang of a case of poisoning by this new hypnotic.

1

Z,

2

7

::

13

15

He was called to see a lady who was said to be suffering from an overdose of a soporific. On his arrival her friends told him that she was in the habit of taking drugs for sleeplessness, but they could give no information as to what drug she had taken or in what quantity she had taken it. The patient, a middle-aged woman, was lying on a bed in a semi-comatose condition. She showed signs of irritation on attempts being made to wake her, but she could not be roused sufficiently to give an intelligible answer to any question. The face was congested and bluish; pupils equal and somewhat dilated; breathing normal; pulse 60, regular, fairly full, and of high tension; skin warm and moist. On a table by the bed was a box which had contained cachets of chloralose (.20 gramme in each), but was now empty, and a bottle of syrup of chloral, from which about four drachms were missing. The diagnosis of chloralose- or chloral-poisoning, or both, was made.

As it appeared that the amount taken might be large, Lang proceeded to wash out the stomach. The water returned almost clear and without smell. An enema of hot coffee was given. Soon she had become sufficiently conscious to state that she had taken only three cachets, and that she had often taken two, and on more than one occasion three, cachets without ill effects.

On visiting her later, he found her quite well except for a slight headache. She stated that she had taken hypnotics for many years. Once before she had suffered from a very large dose of chloralose, but quickly recovered after an emetic. On the present occasion she had taken two cachets at I A.M. and a third about an hour later. He saw her at 4.30 A.M. She thought she slept for a short time after taking the cachets, then felt very ill in an indefinite way, tried to open the door, which was locked, but fell down, and was found there in an unconscious condition.

The chloralose which she was in the habit of taking was made by Bain and Fournier, of Paris; but she had recently obtained a fresh supply from another firm, and two of the cachets taken were from this consignment. The contents of one of them weighed between 3 and 3½ grains,—that is, about .20 gramme.

There is nothing in the symptoms to call for remark. They were sufficiently grave to call for active treatment. The quantity taken—.60 gramme (10 grains)—is the full dose recom-

mended, but she had previously taken as much without ill effects. The untoward symptoms may have been due to rapid absorption from the empty stomach or to impurity in the new supply.

NOTES OF A CASE OF MORPHINE-POI-SONING SUCCESSFULLY TREATED BY ATROPINE.

TAYLOR (Australasian Medical Gasette) was sent for to see a man who was supposed to be dying. On arrival at the house he was at once shown into a bedroom, and saw a gentleman, whom he knew to be in the habit of using injections of morphine rather freely, lying on a bed. He was quite insensible; the pupils were contracted to the size of pin-points; respiration was very stertorous, varying from 4 to 6 in the minute; face and neck dusky, swollen; pulse imperceptible; heart beats, 60 per minute.

The tongue was pulled forward by means of a spring artery forceps, and a hypodermic injection of  $\frac{1}{60}$  grain of sulphate of atropine at once administered. Some dilatation of the pupils soon became manifest; the respiration increased from 6 to 8 per minute; the pulse became perceptible at the wrist, and the heart's action was accelerated. In a few minutes, however, the respiration slowed to such an extent that compression of the chest-walls was resorted to in order to stimulate inspiratory Half an hour after the first injection a second of  $\frac{1}{10}$  grain of sulphate of atropine was given. In a very few minutes the pupils dilated to about three millimetres in diameter, the pulse became full and quick, varying from 100 to 120, and the respiration increased in frequency from 8 to 11. The stertorous character of the breathing, however, was not affected, and the tongue had to be constantly held to prevent its falling back over the opening of the larynx, pressing the lower jaw forward having little effect, the tongue lying like an inert mass in the mouth. No coffee being available, a pint of strong tea was administered per rectum, and mustard applied to the calves of the legs. At about twelve o'clock the pupils showed signs of contracting, and the respiration became slower, each inspiration having the character of a double effort,—i.e., the act was divided by a slight pause; the pulse was about 100, full, and comparatively strong. A third hypodermic injection of sulphate of atropine was now given. The pupils soon dilated to four millimetres in diameter, and the pulse became quicker,—120. The respiration, however, did not improve, but got worse, the inspirations being much shallower, so that constant

compression of the chest-walls became necessary, for when left to himself the interval between each act became so prolonged and the effort was so imperfect that total cessation of breathing appeared imminent every moment. He remained pretty much in this state until about three o'clock, when the breathing gradually became less stertorous and quicker, and suddenly, at half-past three o'clock, he started up, opened his eyes, and stared wildly about. He soon became sensible.

The atropine exercised its full physiological action on the heart and iris. The respiration was not much, if at all, affected by it, and had not artificial respiration been resorted to and kept up almost constantly during the whole time, there can be no doubt that a fatal result would have occurred.

It appeared, on inquiry, that the patient had not been indulging his morphine propensity for some weeks, when, the desire coming strong upon him, at about 8 P.M. he went to a chemist's and purchased a solution of the drug. A half-ounce phial nearly full was found in his pocket.

### OXYVASELINE IN DISEASES OF THE RESPIRATORY TRACT.

Vasogene, so called, is obtained by a method instituted by Klever. The pure substance has the same consistency as liquid vaseline; it is of a brown color, and has a specific gravity of .801; its reaction is slightly alkaline, and with water it forms a permanent whitish emulsion; its odor and taste are peculiar, but not disagreeable. According to the recent studies of BAYER (Rev. de Laryng., d'Otolog., et de Rhinolog.), the drug is perfectly innocuous. He has injected into rabbits as much as onetwo-hundredth of their weight of vasogene without causing death. The different vasogenes of Klever are true medicinal preparations, containing the active principles of natural hydrocarbons, of which, as a general rule, the medicinal vaselines are destitute. They are better solvents than the vaselines: the iodoformated vasogene contains five per hundred of iodoform; the creosotated vasogene, from ten to twenty per one hundred of creo-Besides, the vasogenes have two special properties acquired by their combination with oxygen: one degree, they emulsify liquids and the normal as well as the pathological secretions of the skin, of mucous and serous membranes, of glands, of wounds, etc.; two degrees, they are absorbed with ease.

Writing upon the value of the hydrocarbons

in general, with special reference to oxyvaseline, Bayer calls attention to the uses of this latter substance in diseases of the respiratory The author employs the term "oxyvaseline" for the so-called vasogene products. He has found it highly serviceable, internally administered, in the treatment of chronic bronchitis, asthma, whooping-cough, and particularly tuberculosis. In the latter disease he gives, at the beginning of the treatment, 2 to 5 drops of the creosotated vasogene, in pure water, warm or cold, followed by a glass of milk or a little cognac, to suit the taste of the patient. If possible, he administers at the same time, per rectum, a few drops of the emulsion of the remedy, by means of a small syringe, as in the case of glycerin injections. This operation is not objected to by patients. By the mouth the dose of the drug is increased gradually 1 or more drops a day, until 20 drops three times a day are given. Patients availing themselves of both modes of administration have taken as many as 150 drops per day. This treatment, especially the endermic, is well borne by patients who are unable to take creosotated cod-liver oil in pills or capsules. This emulsion of creosotated vasogene is easily assimilated. When given by the stomach, it very seldom produces gastric disturbances, except when the digestive powers are in a very bad condition. In these instances the rectal injections, which only cause a slight smarting, are employed; and even in these cases as soon as the digestion has improved the emulsion is given by the mouth. Generally, following the ingestion of the remedy, the appetite is ameliorated, this being attributed to an influence exercised by the creosotated vasogene, as antifermentative, on the alimentary tract.

The good effects obtained, especially from the endermic use of the medicament, are marked. The action of the heart becomes regular; fever disappears; the night-sweats are greatly diminished and often disappear also; the expectoration is likewise improved, and together with this there is a diminution in the number of bacilli; respiration is easier, the patients becoming brighter and more hopeful; and the digestive functions are much improved. The author has seen the intestinal pain and rebellious diarrhœa of a tubercular case both disappear in a few days under the beneficial action of the creosotated vasogene. On the whole, the general condition of the patient is improved, with a return of the strength and an increase in bodily weight. With this general improvement the local manifestations are modified. Bronchial râles are not only diminished, but often disappear; and even pulmonary infiltrations are greatly reduced, sometimes to the point of not being detected by percussion. The author has also observed excellent effects produced by the above medication in tubercular diseases of the larynx, accompanied with serious lesions, such as tuberculo-ulcerative infiltrations, and cedematous perichondritis with stenosis of the larynx. In favorable cases of this nature, or in those in which vitality has not been reduced to a minimum, amelioration occurs in a short time.

#### THE THERAPEUTIC USES OF EXALGIN.

In a previous number of the GAZETTE we published an abstract of an article by Marandon de Montyel on the subject of exalgin. Diametrically opposed to the conclusions arrived at by Montyel are the results obtained by Edwuard G. Younger (Bull. Génér. de Thérapeutique) from the use of the above The latter author reports three cases in which the medicament proved serviceable in the treatment of neuralgic pain of functional These good results led the observer to try exalgin in cases of mental disease associated with subjective symptoms similar to those of neuralgic disorders. He details five cases of mental disease in which the drug gave highly satisfactory results. The use of the remedy in these cases was mainly empirical, the author offering no explanation as to the manner in which exalgin acts. He employed the medicament particularly in those hopeless cases characterized by melancholia, accompanied with marked headache and insomnia. The mental state was not ameliorated, but in every case, however, exalgin relieved the two latter symptoms,—that is, the headache and the insomnia. The drug never produced untoward effects, although the writer never gave it in larger doses than 2 grains every four hours. Generally he administered it in repeated doses of 1 grain each, a method that was sufficient to produce the desired effect.

### THE THERAPEUTIC INDICATIONS OF THE MENOPAUSE.

The most frequent troubles coming on at the critical period of the menopause are especially those which disturb the function of digestion and the pelvic circulation, not to speak of the hyperæmias and collateral congestions resulting from abdominal plethora. Of remedial measures, a purgative treatment is among the first indications. According to Savigny (Rev. de

Therap. Med.-Chirurg.), who has published an interesting study of the subject, purgatives are indicated in passive hyperæmias, and especially those of the mucous membrane of the stomach and intestines. They act, besides, upon the liver, the lungs, the meninges, and the brain itself. Purgatives exercise also a derivative and revulsive action on the uterus and adjacent parts. Constipation, indeed, is highly injurious and must be combated by purgatives, and those should be employed particularly that exercise a slow and more permanent action on the intestines, such, for example, as rhubarb, salts, manna, castor oil, etc. On the contrary, drastics, like aloes, colocynth, senna, jalap, etc., should be avoided. Simple water or glycerin injections are of service, and the same may be said of intestinal irrigations of water at a temperature of from 20° to 25° C. Warm baths, at a temperature of from 25° to 30° C., constitute a hygienic and therapeutic measure of the highest importance in the treatment of the different affections of the menopause. baths aid the function of the skin, and, besides, prevent the development of cutaneous troubles, such as acne, eczema, pruritus, etc., not to speak of their general sedative action upon the nervous system.

One of the most common troubles of the critical period is uterine hemorrhage. If such a hemorrhage is due alone to the menopause, and there is absence of any local cause, a medical treatment is indicated; but if the hemorrhage is not marked, rest and antiseptic warm injections are sufficient. For these injections, to one or one and a half litres of boiled water may be added two to four dessertspoonfuls of the following solution:

Perchloride of iron, 15 grammes; Distilled water, 250 grammes.

Should the hemorrhage continue after these injections, the vagina must be tamponed with iodoform gauze once, twice, or as many times as should be necessary. The tampon should remain only from twelve to fifteen hours. For internal medication, Kisch recommends a solution of ten centigrammes of the powdered ergot in one gramme of the tincture, of which 20 drops at a dose are given several times a day.

For vaginal and vulval pruritus, a very frequent and troublesome affection occurring during the menopause, the patient is recommended to take, before retiring, a bath at a temperature of 30° C. In the bath should be placed a bag containing one kilogramme of wheat-bran. After the bath, the vulva and

the adjacent parts should be dusted with an antiseptic powder having tale as its base.

A hydro-mineral treatment is of great service during the critical period. The cold purgative or laxative waters, particularly those containing sulphur and sodium, are to be preferred. Such waters act against constipation, a tendency to obesity, neuralgia, phenomena of cerebral congestion, and even relieve tachycardiac attacks. The thermal waters which contain bicarbonates and sulphates are indicated especially in disorders of the liver and the biliary secretion, since they act by increasing the excretion of uric acid. Waters charged with chloride of sodium, though less efficient, are, nevertheless, valuable in the treatment of congestive troubles of the pelvic The gaseous and ferruginous waters organs. are particularly indicated in the general treatment, on account of their stimulating action on the circulation. Similarly, sea-bathing and cold hydrotherapy are of service. It need not, perhaps, be said that the ferruginous waters are especially useful in anæmic females. certain cutaneous affections supervene, the arsenical mineral waters are to be prescribed.

Diet is of paramount importance. From this point of view patients may be divided into two principal groups: 1, those of a sanguine temperament; 2, those of a nervous temperament. In the first class of cases, especially in those with a tendency to obesity, a light diet is to be preferred, with total suppression of fatty articles of food. For the second class of cases. on the other hand, a substantial, nourishing diet is required. These latter patients should partake largely of farinaceous food, but must abstain from acids, highly-seasoned meats, and too stimulating beverages. Among other things, and in order to reduce to a minimum the causes of hyperæmia of the genital organs, these females should be advised to refrain from sexual intercourse, or at least not to abuse the privilege.

### THE ALCOHOL QUESTION FROM THE PHYSICIAN'S STAND-POINT.

DR. ADOLF STRÜMPEL (Berliner Klinische Wochenschrift, No. 39) speaks about alcoholism with the earnestness of one who thoroughly knows his subject. Touching but lightly upon the legal and national economy phases, he recalls the manifold and close connection between alcoholism and crime, clearly shown in the observations of every-day life and endorsed in plain figures of statistics. As a physician he well knows that the relation between alcoholism and crime is often viewed in

a false light, as, when both abnormities occur, alcoholism is often the cause of crime, while in reality very often both are only the necessary co-ordinated consequences of an hereditary mental tendency, of a psychopathic degeneration.

As to the importance of beer as a source of nourishment, it cannot be denied that the body receives a considerable quantity of nourishment when beer is freely used. But how do the food value and the price of beer compare? In Bavaria a workman receives about four quarts of beer for one mark (twenty-five cents). The four quarts contain, liberally rated, two hundred and forty grammes of carbohydrates and scarcely thirty-two grammes of albumin. But for the same money he receives, if he buys bread, two thousand grammes of carbohydrates and two hundred and fifty grammes of albumin. Therefore the cheapest beer, considered as a means of nourishment, is about eight times as dear as bread. The showing is worse still if beer is compared with potatoes and beans. Strümpel has known of working-men who spent one-sixth of their small income upon beer for their personal consumption.

The albumin-sparing action of alcohol, formerly much quoted, has been shown by more exact investigation to be by no means constant. It appears rather that, under like circumstances, there is even a slight increase in the destruction of albumin.

Neither accident nor special scientific inclination led Dr. Strümpel to devote special attention to the alcohol question, but the force of the urgent facts daily apparent to the busy practising physician.

The present epoch of medicine has rightly been named the etiological. In the diagnosis of the causes of disease physicians now see one of the highest aims of their investigation, because they know that thus alone can the road not only to cure, but to prevention of disease, which is far more important, be prepared.

Those organic changes which Strümpel puts first in considering the baleful effect of alcoholic drinks upon the health are disease of the heartmuscle and its nervous apparatus, disease of the arteries and of the kidneys. He thinks the frequent occurrence of chronic heart- and kidney-trouble from continuous use of alcohol is not sufficiently recognized by physicians. Yet these forms of alcoholism are specially important, apart from their frequency, because they are caused not only by the concentrated alcoholic drinks, but especially by continued in-

temperate use of beer; hence these are seen in much larger classes of population, not only in the poor and mentally feeble classes, but in well-to-do, cultivated classes. Nothing is more false than the idea that alcoholism is lessened when beer crowds out other alcoholic drinks. Under the very mask of an apparently light, palatable, and yet nourishing drink, alcohol has made its baleful entrance into circles which had otherwise remained closed to it.

In the use of beer it is not only the alcohol which is harmful, but the great amount of fluid introduced into the system. Muscular weakness of the heart is specially found among heavy beer-drinkers. The great amount of fluid which these men daily impose on their circulation is almost incredible. Even a daily amount of three to four quarts—i.e., eight pounds of fluid above the usual quantity-cannot remain constant without an influence on the heart. But Strümpel knows that, at least in Bavaria, there are persons whose calling exposes them to special temptation to drink, who consume for years almost daily eight to ten quarts,—i.e., sixteen to twenty pounds of fluid added to their bodies. It is not difficult to understand that such an added burden to the circulation leads first to hypertrophy and then to a palsy of the heart-muscle. Of course, the great addition of carbohydrates, overloading the blood and tissues with food products, is also harmful.

Kidney-diseases are also especially frequent among heavy beer-drinkers. Degeneration of the kidney epithelium and contraction of the kidneys are well known, but acute alcoholic nephritis is less known. It is acute in the sense that here the sum of long-continued chronic poisonous action leads to a severe functional disturbance of the kidney epithelium. The chronic alcoholic nephritis is usually not of a hemorrhagic nature. It is often accompanied by severe ædema, may lead rapidly to death, or may become a chronic nephritis. Complete cures appear to be rare.

In closing, Dr. Strümpel calls attention to an interesting group of diseases in whose cause the excessive use of alcoholic drinks plays a large part, even if one still little understood. In addition to the numerous arresting, poisonous actions which destroy the organic cells, there belong also certain influences upon the course of the general process of metabolism,—gout, diabetes mellitus, and obesity.

Strümpel thinks physicians have it in their power to prevent untold misery and save many lives, if they take hold and work earnestly in this cause. The family physician should specially take care to forbid giving alcoholic drinks to children. It is incredible what folly is committed in allowing children such drinks. Strümpel had a child of five years brought to him with alcoholic polyneuritis, who had received a quart of beer daily!

### TWO CASES OF DIABETES MELLITUS TREATED WITH PANCREAS-JUICE.

Dr. Ferdinand Battistini (Therapeutische Monatshefte, October, 1893) refers to a case of diabetes treated by Cornby with hypodermic injections of pancreas-juice obtained from a The patient was a man twentyguinea-pig. five years old, with the classical symptoms of severe diabetes. He passed from seven to ten quarts of urine a day, which contained from eight hundred to one thousand grammes of sugar and seventy-five grammes of urea. The pancreas-juice was given in doses of ½ cubic centimetre, at first every other day, later every day for five days. The injections were well borne, but had no influence upon the course of the disease, so that Cornby believed they were useless. Subsequently Mackenzie gave internally 15 grammes three times daily. He noticed a lessening in the amount of urine passed and in the subjective symptoms, especially in lessening of the thirst, but no influence upon the percentage of sugar or on the specific gravity of the urine. Wood also noted improvement in the subjective symptoms of diabetes in two cases, but a diminution in the amount of sugar only in one case. Hale White administered internally to two patients on a mixed diet 2 ounces of fresh pancreas daily, or 2 drops of pancreas-juice morning and evening hypodermically. In one case, especially upon the use of the pancreas as food, a lessening of the amount of sugar resulted, but in the other cases there was no result. amount of urea increased in one case, but remained unchanged in the other. There was no change in the subjective symptoms. Knowsley Sibley, however, obtained good results. After two months' treatment a severe diabetic gained seven hundred grammes in weight, and there was an improvement in the subjective symptoms, a lessening of the amount of sugar in the urine and of the urine itself.

Battistini has tried the treatment in two cases of diabetes in which, in spite of an absolute meat diet, the sugar had never wholly disappeared from the urine. The pancreas-juice was given hypodermically, and was obtained fresh and aseptic from a calf or sheep. The pancreas was cut in small pieces, macerated for

twenty-four hours in its own weight of glycerin or of physiological salt solution, and then expressed. Before injection the juice was filtered through sterilized paper, and, if glycerin had been used, diluted with sterilized water. The injections were into the side of the belly, of course given antiseptically. He began with a dose of 5 cubic centimetres, and increased it gradually to 15 to 20 cubic centimetres. The patients were kept on mixed diet, in which carbohydrates formed the principal part.

The first patient was a man thirty-seven years old. On March 14 to 23 the quantity of urine was 4200 cubic centimetres, of sugar 110 grammes, daily. By April 10 the quantity of urine was 4960 cubic centimetres, of sugar 31.28 grammes, daily. No further injections were given, but by April 15 the quantity of urine was 4720 cubic centimetres, and of sugar 12.2 grammes.

The second patient was a woman thirty-nine years old. In this case also there was a decided diminution in the amount of sugar from 43 to 50 grammes to from 3 to 5 grammes; but neither in this nor in the first case did it disappear, nor was the amount of urea influenced. The subjective symptoms improved, but there was no gain in weight.

#### TREATMENT OF ACUTE PARENCHYM-ATOUS NEPHRITIS.

DR. AUFRECHT (Therapeutische Monatshefte, October, 1803) refers to his earlier writings upon the treatment of acute parenchymatous nephritis. The inflamed organs must be spared. This can be done only by lessening the specific work of the kidney,-namely, the excretion of Avoidance of nitrogenous food goes far to achieve this. He gave up the use of diuretics. In the second and third weeks of the disease a marked diuresis often occurs independently of their use. His study of the kidneys in cholera has shown that the most important and the earliest change in the nephritis of cholera takes place in the papillæ. The tubules of Henle are blocked with casts. This fact explains the well-known diminution in the amount of urine which occurs in acute nephritis. Moreover, he has found that an alkaline saline water (the Wildungen water) is capable of getting rid of the casts without injuring the kidneys and at the same time increasing the volume of urine excreted.

Aufrecht believes it to be the duty of the physician to examine the urine at least every other day in all diseases in which nephritis is liable to develop. The first series of such dis-

eases includes scarlatina, diphtheria, pneumonia, typhoid fever, and of course cholera. The second series includes measles, variola, articular rheumatism, angina, and the close of the puerperium. As soon as the existence of renal albuminuria is established, the amount of albumin is to be measured by Esbach's albuminimeter, and until it completely disappears the patient must be kept in bed. His diet should contain as little nitrogen as possible,-rolls, zwieback, coffee with sugar, or; if need be, with milk, oatmeal, groat or flour soup, water, sodawater with raspberry-juice, and red wine. In course of time he has added to these potato-broth with butter, plums, and other stewed fruits, and a sort of confection of boiled rice and stewed

This dietetic treatment suffices as long as there is no considerable lessening of the amount of urine excreted. If the latter occur, a half-bottle to a bottle of Wildungen water is given daily, in small portions, until the normal amount of urine is again excreted. Towards the end of the disease, when albumin has disappeared, he gives iron.

In uræmic attacks he employs a warm wetpack. He is fearful of the use of pilocarpine. Leubartz saw a ten-year-old boy die immediately after an injection, and Aufrecht had the same experience. When anasarca is great he punctures the leg and guards against the development of erysipelas by employing a sublimate dressing.

#### INVESTIGATIONS ON THE INFLUENCE OF IRON WATERS ON HÆMO-GLOBIN.

According to the Medical Press and Circular, Dr. C. Reihl has carried out some investigations in patients in the clinic of Professor Kahler for the purpose of estimating the degree of influence treatment with the mineral waters containing iron and arsenic is capable of exerting upon the blood of anæmic patients, especially as concerns hæmoglobin in the blood-corpuscles.

Summing up the results, Dr. Reihl found that under the systematic use of an arsenic-ferric water, the production of red blood-corpuscles is greatly in advance of that brought about by good nutrition alone. A considerable improvement in the blood can be effected even in the case of chlorotics who, during the treatment with the water, continue to live under the same conditions as those in which the morbid state was acquired. Extensive researches, carried out according to modern diagnostic methods, on the remedial value of

chalybeate water are, with the exception of the work of Scheref already mentioned, not to be met with, and the author therefore hopes to stimulate further allied investigations by this communication. Only in this way can the actual value of the different ferruginous mineral-springs be precisely determined before theories as to their mode of action can be advanced.

Some may ascribe the success in these cases not so much to the arseno-ferric water as to the favorable conditions in which the patients were placed, but these are factors unavoidably involved in all experiments of the kind, and always form an important, nay, according to the opinion of many, the most important, feature of the treatment. Speaking generally, the author is inclined to lay stress upon the considerable quantities of liquid taken daily, even in the ordinary "water-cures;" quite apart from the specific constituents of the water, the imbibition of such volumes of liquid has an important influence upon tissue-change, as has been shown years ago by Voit. It is manifest that this must be the case in a powerful remedy like arseno-ferric waters, although here the quantity of water does not enter at all into the question. Of course the daily quantity of arsenous acid taken is exceedingly small and far behind that given frequently in Fowler's solution or in the pills containing arsenous acid.

Yet, in spite of the minuteness of these doses, an unmistakable arsenic mirror could be obtained by the fifth day from the urine of the patients, all precautions being taken to avoid error.

#### THERAPEUTICS OF RESORCIN.

In an article on this topic in the *New York Medical Record*, PATTERSON details the valuable results to be obtained with resorcin.

Locally, it is a caustic in strong solutions, medicinal strengths (two to ten per cent.) possessing the power of arresting processes of fermentation. Upon mucous membranes and abraded surfaces it possesses local anæsthetic effects of a very high degree of efficacy; in fact, the antifermentative and local anæsthetic effects of the drug are the only ones that have proved sufficiently valuable, in the writer's experience, to give the drug a place in the physician's armamentarium, its use as an antipyretic being unsafe in the large doses required for such effects, even then being inferior to the various "antis" in vogue. As a remedy used locally by spray to the pharynx and larynx, it has become the author's sheet-anchor in pertussis and allied spasmodic affections of the larynx and bronchi. He finds it especially serviceable in cases of whooping-cough in which the hacking cough produces such extreme irritability of the stomach that food cannot be retained, inducing loss of flesh and strength, combined with changes in the lung-substance (emphysema and lobular collapses and infiltrations) and damage to the cardiac valves, producing dyspnæa, insomnia, and great general bodily discomfort, together with intense head-pains from the constantly recurring shocks of the cough; frequently the patients were found not only confined to the house, but bedridden, many being adults.

After beginning the use of resorcin in the manner to be related, reduction in the frequency and severity of the cough paroxysms was quickly noticed. This causative element being eliminated, the remaining symptoms fell in the line of march towards recovery; of course, some instances of permanent damage to the lungs and heart have remained. Many came under the writer's care after having suffered three to six weeks. All cases seen in the early stages where this treatment was instituted were not aborted, as some authorities claim, but the attacks were lessened in severity and shortened in duration very materially, no complications being encountered. He thinks its action in pertussis to be largely due to a local anæsthetic, as the lessening of the excessive sensibility of the pharyngeal mucous membrane prevents cough; though the fact that the bacteriacidal effect of resorcin may kill the microbus morbi is not to be discountenanced.

He administers the remedy by spray. few instances in which he tried it by stomach administration proved failures. A five- to tenper-cent. aqueous solution by a long, straighttubed atomizer into the pharynx every one or two hours should be used. Being thrown with sufficient force, the spray rebounds from the posterior wall of the pharynx upon the epiglottis and the parts beneath it. In obstinate cases the same solution can be thrown into the larynx and, with proper attention, into the trachea. This spray is equally applicable to the hard, dry cough of old bronchitis, and if used with sufficient persistence will lessen the emphysematous tendency towards which these cases constantly progress.

As a calmative in tubercular laryngitis it has proved with him more satisfactory than cocaine. He narrates the history of a case which ultimately proved fatal: the patient, having become adept in the use of the atomizer, was able to obtain great relief from a spray directed into the larynx through a tube bent

downward for that purpose. Its use before eating would greatly facilitate her ability to swallow, and used at other times would alleviate the pains of the disease. Upon two occasions, without her knowledge, the author changed the resorcin solution to that of cocaine. She immediately detected the difference and begged for the original formula. In hay fever, as a nasal application, it is of little use.

In chronic gastritis, particularly of infants and of the aged, it has been a boon, being particularly applicable to those artificially-fed infants of rickety tendencies, who digest badly, suffer from the discomforts of flatus, both gastric and intestinal, and constipation, in consequence of which they are peevish and sleepless in the extreme. He administers it in watery solution, upon an empty stomach, in doses of to 1 grain, for children whose ages range between three and twelve months, one-half to one hour before feeding; it will thus be repeated every two or three hours. It has the advantage of being tasteless, and can thus be readily exhibited by allowing the child to suck the prescribed dose from a wineglass through its nursing-nipple with the tube attached. these cases it may be advantageously combined with the phosphate of sodium, proper regulation of diet, of course, being indicated.

His experience in adults coincides in general with those of Thompson. Suffice it to say that it has acted most favorably in the chronic gastritis of old alcoholics. It has appeared to act as well in 3- as in 5-grain doses.

Locally, in skin-affections, it is an established dermatological formula in chronic eczema and psoriasis, where a stimulating application is indicated in exudative thickenings.

### CYANURET OF MERCURY IN OCULAR THERAPEUTICS.

Schloesser (Annales d' Oculistique, August, 1893) for the last twelve months has studied the antiseptic qualities of cyanuret of mercury, comparing it with sublimate. Local irritation produced by this salt is about four times less than that caused by sublimate. Cyanuret practically does not cause the albumin to coagulate, while it is, on the other hand, profusely precipitated by bichloride of mercury. Finally, the instruments are not affected by a solution of cyanuret.

He has used cyanuret of mercury in the treatment of cases of ocular infection, and has treated severe cases of conjunctivitis with a solution of cyanuret of two per cent., by touching the inside of the eyelids; symptoms of secretion speedily ceased.

Antiseptic washing with the same solution was practised in thirty-seven cases of severe or chronic purulent dacryocystitis. Three cases of chronic blennorrhæa of the sac were cured by this treatment, without any sign of relapse.

# TREATMENT AND PROPHYLAXIS OF CASES OF INFECTION CONSEQUENT UPON AN OPERATION FOR CATARACT.

Darier (Annales d'Oculistique, August, 1893) thinks that the new method of subconjunctival injections of sublimate which he has recommended, together with Abadie and other oculists, will combat incipient infection, whether following in the train of an operation for cataract or brought about by other causes.

If used at the outset, injections alone may prove sufficient; if infection has already become general, it is necessary, in addition, to cauterize the wound thoroughly and remove the contents of the anterior chamber. In this way he has obtained good results, which other authors have also secured by the use of these injections.

He believes the effect of these injections is to force the sublimate, in part at least, through the lymphatic spaces as far as the ocular medium; its action is thus more rapid.

Injection should be repeated every day, or at different intervals, according to indications. After cocainization, it gives very little pain. It may even be used as a preventive, if there is reason to fear infection after the operation.

SATTLER thinks that from what we know of the paths of penetration into the eye, we cannot form an opinion as to the manner in which sublimate itself enters it. We have seen colored substances conveyed into the eye by means of leucocytes, but sublimate enters into it as an albuminate and by a chemical process, which is not the same thing. Therapeutic tests with subconjunctival injections are of too recent origin to admit of any definite conclusion.

LAQUEUR stated that after making a certain number of subconjunctival injections, he entertained a rather favorable opinion of them. In eight or ten cases of various affections of the eye, some of which were old cases, accuracy of vision was unquestionably increased.

DUFOUR confirmed what Darier has said in regard to ocular infection. In two cases he succeeded in checking incipient infection of a wound caused by cataract extraction. It is true, a corneal trouble followed, but with a possibility of making an iridectomy.

In cases of choroiditis he has made nearly four hundred injections with good results. Central infiltrations of the cornea are equally amenable to this mode of treatment.

### DISINFECTION OF THE CONJUNCTIVAL SAC.

FRANKE (Annales d'Oculistique, August, 1893) has tried to accomplish disinfection of the conjunctival sac by means of the solutions commonly used, such as sublimate, chlorine, trichloride of iodine, and has found that they all have nearly the same effect,—that is to say, they are capable of destroying existing microbes, but only those on the epithelial surface. He has also ascertained this important point: that those pathogenic microbes which resist disinfection lose none of their virulence.

SATTLER, nevertheless, believes that the antiseptics at present in use certainly diminish the virulence of micro-organisms contained in the conjunctival sac. He thinks this is the true explanation of the fact that we have scarcely any suppuration nowadays, but only less virulent infections, such as iritis or cyclitis.

## TREATMENT OF TRACHOMA AND LUPUS OF THE EYELID BY MEDICINAL TATTOOING.

ARMAIGNAC (Annales d' Oculistique, August, 1893), after having, like everybody else, used the new method of treating granulation by brushing, applied to trachoma a process which proved perfectly successful in a case of primitive lupus of the conjunctiva, and which he has named "medicinal tattooing."

This process simply consists in tattooing deeply the diseased tissues with the bundle of needles used for tattooing the cornea. A powerful microbicidal solution is substituted for Chinese ink. Up to the present time he has only used a solution of sublimate at 1 to 500, but he applied subsequent and more or less frequent washings, both with this same solution and with crude petroleum, to which he added various essences,—to wit, mint, cinnamon, anise-seed, and cloves, in the proportion of one per cent. He finds this same medicament of the greatest service in certain forms of chronic conjunctivitis which baffle all other treatments in ordinary use.

In a patient suffering from lupus, lupic ulceration had produced a deep indentation on the upper eyelid, and several scales scattered over the conjunctiva of the two eyelids portended the speedy destruction of both these tissues. In the beginning of August he tattooed all the ulcerated scales with a solution of bichloride at 1 to 500, and then brushed them with the same solution, in order to saturate the tissues with it more thoroughly. At the end of a month all the ulcers had healed, and the two patches of amyloid appearance found on the conjunctival surface of the inner eyelid had disappeared.

About the same time that he began to tattoo the patient whose case is just reported, he commenced to treat several patients with granular lids by the same process, and within a few weeks a marked improvement was noticeable; trachoma soon disappeared, and there remained in its place a smooth mucous membrane of normal appearance.

Since then he has continued the practice of tattooing granular lids with the same success, usually adding subsequent brushing with bichloride or the different extracts mixed with water or petroleum, mentioned above.

Judging from indications, tattooing seems to him to have a marked advantage, for it in no wise affects the mucous membrane, leaves no scar, and besides, while it causes slight local bleeding, it effects laceration of the granulations at whatever depth they may be situated, —in the thick part of the tarsus, for instance, where neither brush nor the various rasps are able to reach them.

In order to have a plane of resistance permitting safe penetration to a greater depth and with more ease with the needles, he frequently uses Desmares's or Snellen's forceps for holding the eyelid; this somewhat diminishes the pain caused by tattooing, which is rather severe. The object of brushing after tattooing is to destroy any superficial granulations that may have escaped the needle and at the same time to force the parasiticide solution into the needleholes.

Tattooing, however deep it may be, or however great the number of needle-holes, is never followed by any intense inflammatory reaction, possibly on account of the subsequent bleeding, which is sometimes very profuse. As the bundle of tattooing needles is very small, being composed of only four or five very fine needles, it can be brought to bear on the affected parts alone and with great rapidity.

By taking the preliminary precaution of covering the part to be operated on with a drop of a parasiticide solution, the needles, being plunged into the midst of this fluid, carry it through the whole thickness of the neoplasm and enable it to reach the microbes, if any there be.

MARTIN has modified the operation of brossage in two particulars. He begins by making an incision in the external commissure, in order to better scrape off the granulations on this level, which are difficult to reach without this precaution. Furthermore, he uses a solution of 1 to 1000 instead of 1 to 500. He thinks the operation just mentioned by Armaignac can only be recommended in mild cases. Abadie's method succeeds in curing the more exuberant forms, particularly those found in Egypt. He doubts if the process of tattooing would prove effective in these cases. Theoretically, he would attach more importance to the numerous needle-holes in the thick part of the mucous membrane than to the tattooing itself.

### SUBCONJUNCTIVAL INJECTIONS OF SUBLIMATE.

THE following is an abstract of the correspondence concerning subconjunctival injections in ocular therapeutics, the result of inquiries sent to a number of oculists of all nations (Annales d' Oculistique, August, 1893):

The question of medicinal injections under the conjunctiva is still pending, partly because many who have tried the treatment have not yet published their results, and because, for lack of information on the subject, a great many of our colleagues have never made any trial of it whatever, and still others reject the new treatment a priori.

The exact technique of subconjunctival injections of sublimate was fully explained in Darier's article in the April number of the Annales d'Oculistique (abstracted in the Therapeutic Gazette). The question is, Are these injections effective to the degree claimed by our colleague? The first citations are from those who defend the treatment, and first among these from Abadie:

The value of experiments made in a new method of treatment depends on their being made on a generous scale and applied to a large variety of cases, and the experimenter should guard against allowing his criticism of the results obtained to be influenced by his wish to prove the method successful.

These injections were first intraocular, used in the treatment of sympathetic ophthalmitis; but, on account of the many defects of the operating apparatus and for other reasons, they were soon replaced by subconjunctival injections; but, although he considers the latter preferable in most cases, the former must not be abandoned altogether.

He can only repeat what he has said before in regard to sympathetic ophthalmia. In the case of injury with infection of the wound, if the injury is not so serious as to preclude all possibility of saving the eye, the surface of the wound should be touched with the galvanic cautery and sublimate injected under the conjunctiva. It is often possible in this way to arrest sympathetic ophthalmia which has already declared itself in the other eye. But if the traumatism of the injured eye is such that all hope is at an end, or if the disorder continues to develop, in spite of the preventive measures which he has mentioned, the seat of infection should be removed without hesitation and enucleation practised.

After enucleation the eye affected by sympathy will be greatly benefited by subconjunctival injections. Before undertaking any operation whatever—either iridectomy or extraction of the crystalline lens—it is well to destroy the activity of intraocular microbes by injecting sublimate under the conjunctiva for some time and by a liberal application of mercurial friction. This will prevent secondary pupillary occlusion, so frequent in such cases.

Subconjunctival injections are especially effective in cases of sluggish chronic chorio-The presence of this disease can only be detected by means of the ophthalmoscope, sometimes by simple discrete foci occupying the region of the macula or by patches scattered over the whole extent of the back of the eye. Sometimes these morbid centres are confined to the retina and the choroid, without affecting the vitreous humor, which remains entirely transparent. Sometimes the vitreous humor becomes clouded to such a degree that it conceals the deeper injuries. Sometimes the progress of the disease becomes general and affects the uveal tract and the iris, and synechiæ result.

He does not hesitate to say that iodide of potassium, alone or in conjunction with mercury, which is often recommended in these cases, has always seemed to him to be manifestly injurious.

Injections of pilocarpine have never, in his experience, produced good effect except in cases of chorio-retinitis caused by myopia; certainly not in the forms of the disease now under consideration, which are surely of infectious origin.

In obstinate cases he has found it necessary to add local injections to the general injections of sublimate, the dose for the latter being I centigramme every other day.

3

7

Darier considers local treatment sufficient in non-active forms confined to the choroid and the retina; certain it is, however, that as soon as the vitreous humor becomes diseased and the progress, from being confined to the lowerlying parts, reaches the uveal tract, the greatest benefit is derived from general injections.

Subconjunctival injections of sublimate are very useful in the early stages of infectious ulcers of the cornea, and also when ectatic corneal scars left by an operation for cataract or glaucoma become infected. While a few subconjunctival injections made at the level of the infected spots will often arrest the progress of the disease, if there is danger of suppuration, the affected spots should be well cauterized with the galvanic cautery. In general, subconjunctival injections of sublimate do not succeed well in myopia accompanied by posterior sclero-choroiditis or by foci of macular chorio-retinitis. Here the disease seems to be of mechanic origin, produced by distention, rather than of a contagious origin, hence the injections are not successful.

If the injections in the case of myopia produce no improvement, it proves that it is simply myopic chorio-retinitis; still, infectious chorio-retinitis may develop itself in a myope, and therefore be susceptible of treatment by sublimate.

Subconjunctival injections of sublimate have no good effect in parenchymatous keratitis, at least not in the acute stage; general subcutaneous injections then prove a sovereign remedy; but in the period of decline, when there is only a sluggish remnant, subconjunctival injections may be tried.

In cases of iritis or acute irido-choroiditis, and in general where there is any kind of infection of the ciliary region, with active reaction, even in the case of syphilitic irido-choroiditis, local injections of sublimate are of no avail; it seems their irritating effect more than counterbalances their microbicidal tendency; in all such cases, therefore, we must renounce them and confine ourselves to the general treatment.

VENNEMAN has used subconjunctival injections of sublimate of 1 to 1000 a good deal, and is well satisfied with them. In cases of chronic irido-choroiditis and in one case of sympathetic ophthalmia the result was excellent.

He has used the same injections with equally good results in cases of acute choroiditis and chorio-retinitis of whatsoever origin.

COPPEZ, by means of injections of sublimate, was able to arrest the progress of panophthalmitis in three instances after a violent traumatism, and twice after an operation for cataract, where the situation seemed hopeless. The two cataract patients recovered with very good evesight. One of the most interesting cases that has come under his observation was that of a young girl whose father was syphilitic. was afflicted with parenchymatous keratitis in both eyes, complicated with iritis and later with glaucoma. The right eye was entirely lost, and the left eye, which was quite hard, still retained some perception of light; the corneæ were entirely blurred and the patient complained of intense suborbital cephalalgia. He made a large iridectomy in the left eye which soon restored intraocular tension to its normal state; only, weeks and months passed and the eyesight did not come back. He then tried the same injections of sublimate that he had so successfully applied in a case of sympathetic ophthalmia (about one-half of a Pravaz syringe of sublimate at 1 to 1000). After no more than five injections, the young girl began to distinguish large objects and to move about alone.

Gosetti reports a severe and recurring case of sympathetic ophthalmia where the injections were remarkably successful.

LAGRANGE is convinced that sublimate penetrates into the anterior chamber by the interstitial, lymphatic paths, and therefore acts locally by mingling with the aqueous humor, and by entering into the tissue of the cornea, etc.

Though it may be objected that the general treatment is sufficient to cure syphilitic affections of the eye, he has cured patients (by means of injections) where the general treatment had no effect, and recovery was evidently hastened by subconjunctival injections in cases where the general treatment gave some show of success. His impression, derived from clinical practice, is in favor of subconjunctival injections, and he has decided to use them in his daily practice.

Motals, in cases of severe ocular syphilis and in a case of interstitial keratitis of hereditary syphilitic character, was impressed by the rapidity of the recovery under subconjunctival injections.

DE SCHWEINITZ,\* of Philadelphia, according to a communication in the Therapeutic Gazette, obtained good results with injections of sublimate in episcleritis, syphilitic iridocyclitis,

<sup>[\*</sup> He has, however, had failures, under the same treatment, in similar cases —ED.]

gonorrhœal iritis, and in one case of infectious corneal ulcer.

Grandclement considers that subconjunctival injections of hydrargyrum have most effect "in cases of serious or desperate affections of the middle or vascular coatings of the eye,—namely, the iris and the choroid,—and consequently, also, in their milder forms." He does not think much of their efficacy in affections of the cornea "by infiltration," nor in diseases of the internal layers of the retina.

The result of all these observations is in favor of subconjunctival injections of hydrargyrum, and especially sublimate, in that class of ocular diseases which may be traced to acute, but especially chronic, infection of the entire uveal tract. Myopic choroiditis is not affected by the treatment, because not of infectious origin. The same is true of sclerotitis and simple parenchymatous keratitis, except where it is complicated with iritis or choroiditis. The best results seem to have been observed in severe and recurring cases of iridochoroiditis which baffled all other modes of treatment.

We will now consider the effect of these injections in cases of infectious keratitis and conjunctival granulations.

Gossetti has found this remedy very effective in cases of contagious ulcers of the cornea; frequently the first injection would arrest the development of the ulcer, and a second one would be followed by an improvement which showed itself in the diminution of the hypopyon and the healthier condition of the base of the ulcer. Though the progress of recovery is slow, a complete cure is often effected without having recourse to a third injection. The injections are ineffective, however, where the ulcers are large, with ragged edges, and the purulent discharges more than half fill the anterior chamber.

VAN MILLINGEN has tried subconjunctival injections in the hypertrophied sac in but two cases of trachoma; the reaction was such that he gave up the process, which he considers dangerous and much inferior to operation with the roller-forceps as recommended by Knapp.

DRANSART arrived at very different conclusions, but he added scarification and brushing, or brushing alone, to the treatment.

There are other substances, especially cyanuret of mercury and trichloride of iodine, which may be employed for subconjunctival injections.

ROGMAN thinks that the superiority of the treatment by injections over the ordinary methods shows itself in cases where contagion,

after passing through the external membranes, penetrates to the deeper tissues of the eye: irido-choroiditis after lenticular extraction, septic complications of cystoid scars, hypopyon, purulent accumulations in the vitreus consequent upon traumatisms, etc. For, if we hesitate to use the galvanic cautery, we know how unreliable in their action are internal treatment, bathing, ointments, etc., usually prescribed.

In nearly all his injections he uses one-half a Pravaz syringeful, and repeats two or three times, according to necessity. He uses solutions of cyanuret of mercury at 1 to 1000, 1 to 2000, or 1 to 4000, which appears to him to be more reliable than sublimate. He also uses a solution of trichloride of iodine at 1 to 1000 in a physiological solution of sea-salt.

ROGMAN, although satisfied with certain results in cases of severe ocular infection, does not feel inclined to apply subconjunctival injections to an unlimited extent.

GALLEMAERTS does not consider trichloride of iodine in any way superior to sublimate.

PFLUEGER has given up the use of mercury in subconjunctival injections, on account of the great and protracted irritation which it produces, and uses instead trichloride of iodine, of which he takes a full Pravaz syringe (1 to 2000) twice a week.

The following are the cases in which he used these injections, with the results obtained:

- 1. Retrobulbar Neuritis.—Result indifferent.
- 2. Detachment of the Retina.—The injections at first greatly increased the field of vision, but the effect was not lasting.
  - 3. Acute Irido-cyclitis.—Negative result.
- 4. Acute Sympathetic Irido-cyclitis.—Injections combined with punctures in the anterior chamber improved the condition of the eye suffering by sympathy for two or three weeks. The pupil dilated, exudations partly subsided, and visual acuteness became greater. But after repeated relapses he abandoned the treatment and returned to mercurial frictions, which failed to prevent phthisis of the bulb; there remained light perception.
- 5. Chronic Sympathetic Irido-cyclitis.—In two cases the eyesight of both eyes was much improved by subconjunctival injections of trichloride of iodine.
- 6. Serous Iritis.—In one case the injections appeared to be beneficial, in another they did not at all check the ordinary development. In a third he suspended the injections on account of the increasing intraocular tension.
- 7. Sclerotitis. —In theory the injections should have a marked influence on this dis-

ease, but their effect was slight, and he fell back on the galvanic cautery.

- 8. Acute Diffuse Trachomatous Keratitis complicated with Numerous Small Abscesses on the Cornea.—In this disease the injections, combined with friction of the conjunctiva with a solution of trichloride of iodine (1 to 1000), cleared away the opacity of the cornea in a relatively short time. The best results I have yet obtained from these injections have been in cases of choroiditis and irido-choroiditis with or without opacity of the vitreous humor.
- 9. Macular Retino-choroiditis and Disseminated Choroiditis.—Result in general satisfactory and encouraging. Sometimes the treatment was supported by other remedies, especially iodide of potassium. In these cases the injections were made in one eye only, the other one being used as a gauge.
- 10. Chronic Disseminated Choroiditis of Long Standing: Four Cases.—In two cases the condition had become stationary and there was no change; in two others vision noticeably increased.
- 11. Irido-choroiditis with Opacity of the Vitreous Humor.—Here the treatment is very effective.

We will now present the opinions of those whose experiments with this mode of treatment were partially or wholly unsuccessful.

Masselon states that subconjunctival injections have frequently been used at his clinic,—a solution of sublimate at 1 to 1000 and from one to several drops to a dose. As the local mercurial treatment was usually applied in conjunction with a general treatment, it is hard to pronounce upon the real value of subconjunctival injections of mercury. However, in those cases where the local treatment alone was pursued, no good results could be noticed. He never met with any of those sudden improvements brought about by a very small number of injections, as was reported.

LAQUEUR has used subconjunctival injections of sublimate in syphilitic iritis and chronic central choroiditis, and is not favorably impressed by the new process; injections of  $\frac{1}{10}$  milligramme, several times repeated, had so little effect on the progress of the disease that he resumed the use of mercurial friction.

DIANOUX has used injections of sublimate in the following cases: Three cases of macular choroiditis, seven of irido-choroiditis, one recent detachment of the retina, one chorioretinitis with syphilitic relapse, one hereditary syphilitic case of interstitial keratitis.

The number of injections varied from five to twenty. In spite of cocaine, the pain was always intense and the reaction variable. In two cases the reaction was such as to cause him serious anxiety, and once distrophic keratitis followed by central leucoma was developed. Ophthalmoscopic lesions were never affected to any appreciable extent. In irido-choroiditis the result was absolutely negative, also in a relapse of retinitis and in detachment of the retina. A case of interstitial keratitis remained in statu quo after a slight improvement in the beginning. In eleven out of thirteen cases of macular choroiditis there was no result. Twice there was a noticeable and rapid improvement in the eyesight, but in these two cases there was simply ædema of the retina in the neighborhood of recent pigmentary patches.

He does not think that with such doses there can be any antiseptic action, nor even any modification of the tissues of the eye affecting their resistance to pathogenous agents. The effect is, he thinks, analogous to that produced by injections of terebinthina, derivation or revulsion; a moral effect of suggestion in the patient, perhaps also of auto-suggestion in the physician.

Still, he firmly believes in the future of subconjunctival injections, and is perseveringly experimenting with the nature of solutions, doses for injections, and their indications.

PROFESSOR HAAB, of Zurich, tried the injections in ten cases of interstitial keratitis, with no result. Dr. Fick, of Zurich, used the same injections in three cases of cyclitis, with no better success.

Terson, in a case of syphilitic chorio-retinitis, made two injections, several days apart, using three drops of sublimate at 1 to 1000, and each time there appeared under the conjunctiva a bleb the limits of which apparently defined the parts of the episcleral tissue touched by the hydrargyric solution. Each time there was produced serous chemosis to such a degree that a slight scarification brought out several drops of citrine-colored serum. This patient was undergoing mercurial friction and taking 5 grammes of iodide of potassium daily.

Is it possible that the iodide, impregnating all the tissues and combining with the sublimate of the injection, formed biniodide of mercury, infinitely more caustic in this pure state than sublimate at 1 to 1000? We know that such a result has frequently been observed on the surface of the conjunctiva, and particularly in the lower sac, when we blow calomel between the eyelids of a patient who is at the same time undergoing an internal treatment of iodide. In any case he advises using a very moderate dose of the solution of bichloride, or

at least to examine the field carefully when patients are taking any considerable dose of iodide internally.

Finally, we have to report the opinions of those who did not consent to test the method of subconjunctival injections. Their reasons, though theoretical, are interesting to know.

PROFESSOR MICHEL, of Würzburg, considers the method incompatible with the principles of ocular asepsis.

PROFESSOR COHN, of Breslau, fears the irritation produced.

Panas says, "Is it to be supposed that the injections act chemically? How could they in such a feeble homeopathic dose? And it has not yet been proved that they penetrate into the eye.

"Is the action of the injections revulsive like that of a blister in pleurisy or a cauterization? If that is the case, a purely revulsive and simpler treatment would suffice."

VALUDE, whose industry—much to be commended—has gathered and prepared these opinions, concludes:

"The reader must choose for himself, from the opinions presented for his consideration and according to the names of the writers, the one that most appeals to his own judgment. At all events, the results obtained from this new remedy justify our efforts to publish the cases observed for the benefit of those who are not yet conversant with the question or have never experimented with this new mode of treatment."

AN OPERATION FOR THE RELIEF OF SYMBLEPHARON, OR TO ENLARGE A CONTRACTED SOCKET SO THAT IT MAY HOLD A GLASS EYE.

DR. PATRICK W. MAXWELL (Ophthalmic Review, July, 1893) describes the case of a young woman who had worn a glass eye satisfactorily for a time, but granulations followed by cicatricial bands soon contracted the socket so that the glass eye could not be inserted. bands were removed two or three times, only When he saw the patient a fairly uniform cicatrix extended as an inclined plane from the back of the socket to the edge of the lower lid, so that, even if the glass eye were put in, there was nothing to hold its lower edge. The fornix under the upper lid was about normal in extent in its outer half, but a cicatrix obliterated the nasal half in a manner similar to that described in the case of the lower lid.

After two weeks' treatment with nitrate of silver, on account of some conjunctivitis, an

incision was made parallel with the edge of the lower lid, about five or six millimetres deep in the floor of the socket. This was made to gape by drawing on the lower lid, and a piece of mucous membrane from the cesophagus of a cat was stitched to the edges of the raw surface. The graft took and a fornix was formed, but in about two weeks the original condition was reproduced and the new mucous membrane wrinkled up into a line.

On October 15, 1891, an incision similar to that in the last operation was made in the floor of the socket. An incision rather longer than the first was then made in the skin, also parallel with the edge of the lower lid and about five millimetres below it. A second and more curved incision was made below this, leaving a piece of skin three millimetres wide at each end and about eight millimetres wide in the centre. This was dissected up to form a bridge. The skin of the cheek below the last incision was then undermined for a short distance to allow of its being pulled up later. A suture, armed with a needle at each end, was now passed through two points in the middle of the bridge and brought out through two points in the skin of the cheek lower down. At the same time the incision at the upper border of the bridge was deepened so as to pass through the orbicularis muscle and palpebral ligament, and made to communicate with the incision in the floor of the socket. The bridge was now drawn behind the lower lid, its upper edge sutured to the posterior lip of the incision in the socket, and its lower edge to the anterior lip. edges of the space in the cheek were then drawn together by a few stitches. Lastly, the ends of the suture in the bridge were drawn on till a good fornix was produced, and tied rather loosely over a piece of drainage-tube.

It was thought that a similar operation on the upper lid, from the necessary transverse division of the tendon of the levator palpebræ, would produce ptosis. It was therefore thus modified.

An incision was made through the cicatrix under the inner half of the upper lid sufficient to free it, and at a point corresponding to the outer end of this two incisions were made in the skin of the lid and carried outward to meet at a point, forming a flap rather longer than the internal incision. This flap was dissected up to its base and a narrow knife passed right through into the socket, making a vertical incision. The flap was now pushed through by a probe. Its raw surface was placed in contact with the raw surface inside and secured with sutures. The edges of the skin-gap were also

sutured together. The suture tied over the india-rubber tube was removed on the third day and the other sutures on the fifth. A glass eye was introduced for a short time on the tenth day, and worn for a longer interval each day. The puckers at each end of the cicatrix gradually smoothed down.

#### THE EFFECTS OF ANTIPYRIN ON CER-TAIN FORMS OF ATROPHY OF THE OPTIC NERVE.

VALUDE (Annales d' Oculistique, September, 1803) contributes an article on the effects of antipyrin in the treatment of optic nerve atrophy, and believes that this drug, by reason of its peripheric vaso-motor action, may have a favorable effect in certain forms of this disease which arise from a vascular change in the connective interstitial tissue which constitutes the stroma of the optic nerve. The drug, therefore, will act in atrophies consequent upon ascending or descending neuritis, excepting in tabetic gray atrophy and atrophies from compression, where the nervous fibre is radically degenerated. He thinks that subcutaneous injections are the least apt to cause gastric troubles, and uses a strong solution,-one gramme of antipyrin to two grammes of distilled water,—to which he adds a little cocaine. Every two days he administers 1 gramme, othen 2 grammes,—that is to say, 2 or 4 grammes of the liquid. He has never seen, with proper precautions, inflammatory symptoms follow this treatment.

#### TOBACCO AMBLYOPIA.

K. Lowegren (abstract in Revue Internationale de Bibliographie Médicale; Pharmaceutique et Vétérinaire, September 25, 1893) believes that just as in a number of cases the abuse of spirits is the principal or only factor in the causation of central amblyopia, so in others tobacco may alone be responsible. In one of his cases, a woman aged forty-two, who was in the habit from early childhood of smoking Norwegian cut tobacco in a short pipe, the presence of the amblyopia is interesting, as showing, in the first place, that the tobacco alone was the cause of it, and, in the second, that women are not immune. progress of pure tobacco amblyopia, according to the author, is good, and complete blindness extremely rare. The author has never seen pure nicotine amblyopia from chewing tobacco or in snuff-takers. He believes that the smoking of damp tobacco is worse than that of dry tobacco. The important treatment consists in

removing the cause, allowing the patient to regain good health; and he recommends quinine as the principal remedy, reserving subcutaneous injections of nitrate of strychnine, in doses of 1.5 to 2 milligrammes once daily in the temporal region, for more aggravated and advanced stages.

#### THE TREATMENT OF BLEPHARITIS.

VALUDE (L'Union Médicale, No. 38, 1893) recommends frequent bathing of the inflamed lids with boric-acid solution or ordinary boiled water. Scrofulous blepharitis, provided it is hypertrophic and not ulcerated, is treated by applying to the edges of the eyelids a thin layer of the following salve:

Red oxide of mercury, .20 centigramme; Subacetate of lead, I gramme; Vaseline, Io grammes.

In the ulcerated varieties he believes it preferable to avoid salves. In place of these it is advised that three or four times a day for half an hour at a time the eyes of the patients be kept closed and compresses saturated in a strong solution of subacetate of lead (Goulard's extract) be applied to them. To hasten cicatrization of the ulcers, they are brushed with a solution of nitrate of silver, two per cent., and the deep ulcers lightly touched with a pointed pencil of the mitigated stick. When cicatrization has occurred, the salve may be employed. When the variety is characterized by yellow crusts on the ciliary edge, with or without former ulcers, the ordinary yellow oxide of mercury ointment is advisable. If the edges of the lids are much stuck together, sudden separating of them is to be avoided, and the edges should be softened by a bath of marshmallow water, or even by a small poultice, especially if the variety is eczematous. The usual removal of diseased eyelashes is suggested, and if there is a tendency to ectropion, incision of the lachrymal point is advised. The general treatment applicable to scrofula is strongly urged.

In the herpetic variety of blepharitis, Valude advises epilation, frequent bathing with very hot boric-acid water, and, if necessary, the application of small poultices made of potatoes, marshmallow root, or the pulp of apples, to the edges of the lids. If it is a mild variety, oxide-of-zinc ointment is advisable; if there is much itching, the red oxide salve; and if the eczema has spread over the eyelids, Hebra's ointment, —namely, simple diachylon ointment, ten grammes; vaseline, forty grammes. If there is a tendency for the ulcerated surfaces to spread, painting with nitrate of silver, one per cent., is

urged, and also the use of corrosive sublimate in increasing strengths. Proper regulation of the diet, keeping away from irritating surroundings, such as smoke, etc., are urged. Curiously enough, nothing is said of the most important part of the treatment,—namely, correction of refractive error.

### THE CURATIVE EFFECT OF ERYSIPELAS ON GONORRHŒA.

SCHMIDT (Centralblatt für Gynākologie, No. 30, 1893), on the basis of a single case, suggests that the curative effect claimed for erysipelas in the case of certain malignant growths and of ulcerating gummata may also obtain in gonorrhœa.

A girl, three years old, was brought to him, who had suffered for four days with vaginal discharge due to criminal attempt upon the part of an adult. There was ædema of the greater lips and purulent discharge from both the urethra and vagina, and in this discharge typical gonococci were found.

On the sixth day of the gonorrhœa erysipelas developed on the upper third of the thigh; at the same time it was noted that the œdema of the greater lips had disappeared and that discharge had ceased. The following day the genitalia were absolutely normal in appearance and no discharge could be obtained either from the vagina, vulva, or urethra. Two weeks later a deep abscess was opened on the outer aspect of the leg just above the ankle. The pus of this abscess contained streptococci. Two weeks after this operation the child was entirely well, and in the interval there had been no vaginal discharge.

It is well known that gonorrhoea is difficult to cure in female children, and usually runs a tedious course. In this case the prompt disappearance of discharge with the development of erysipelas was striking. The case was again observed two months later, and there was no return of discharge from the genitalia.

### LIGATURE OF THE UTERINE ARTERIES FOR THE CURE OF MYOMA.

GOTTSCHALK (Centralblatt für Gynäkologie, No. 39, 1893), proceeding on the basis of Kuestner's experience in the treatment of uterine myomata by ligature of the arteries, has performed this operation with most satisfactory results. The vessels were exposed exactly as though a total vaginal extirpation were contemplated, and the bladder was provisionally freed from the uterus in order to fully protect it against wound.

Three silk ligatures, including the lower third of the lateral ligaments, were placed on each side. The vaginal wound was closed with catgut suture, and the patients were kept in bed for about eight days. In all, seven cases were treated. Two of these were operated on last In these cases sufficient time has not elapsed to judge of ultimate results. Both suffered from profuse hemorrhages, which ceased a few days after operation. In the remaining five cases intervals of time varying between twenty-one months and four months have elapsed. The myomata were about the size of an apple. In two cases complete cure has resulted, since not only have bleeding and subjective symptoms disappeared, but the most careful search has failed to discover traces of the tumor. In the remaining three cases the myomata have markedly diminished in size and the whole uterus has grown smaller. two of the cases, both middle-aged, there has been no menstrual flux since operation. one of these cases violent hemorrhages had occurred for a period of nine months, in spite of skilful gynæcological intervention. extirpation of the uterus was advised, since the loss of blood threatened to result fatally. An examination of this patient showed a large retroverted uterus with a fibroid the size of an apple growing from the right side and a second tumor the size of a walnut projecting from its posterior wall. Ligature was performed the 28th of January of this year, the menopause occurred the 13th of March, and at this time both tumors had disappeared and the uterus was about normal in size. The patient regained her former health and has remained completely well.

The author believes that ligature of the uterine vessels should be performed not only for the cure of myoma, but also for the relief of cases of concentric hyperplasia. The operation would also be applicable in those cases of uncontrollable climacteric bleeding which are not ovarian in origin. One such case was successfully treated in accordance with this method.

### A USEFUL METHOD OF DRAINAGE IN SUPRAPUBIC CYSTOTOMY.

COOB (Boston Medical and Surgical Journal, August, 1893) calls attention to the difficulty of effectually draining the bladder after suprapubic cystotomy.

In a majority of the cases the lining membrane of the bladder is in a state of chronic inflammation, suture is contraindicated, and the wound in the abdominal wall and the bladder must be left wide open. In a recent case under the author's care, after trying several methods of drainage and finding that sooner or later all of them flooded the patient and bed and kept the wound filled with a pool of urine, the following method was devised and drained the bladder perfectly:

An ordinary glass drainage-tube, rounded at the lower end and with a collar at the top, such as is used in abdominal wounds, was passed into the bladder, and into this was pushed for its whole length a wick or tight roll of iodoform gauze, while the free end of this wick, about three feet long, was drawn through a flexible rubber tube and led over the side of the bed into a bottle. It was found that no gauze could be used to pack the wound about the tube because of its capillary action defeating somewhat the perfect working of the gauze in the tube. The recti muscles hold the tube fairly in place. The wound is packed with absorbent cotton thoroughly impregnated with oxide of zinc ointment; this acts both as a dam and as an antiseptic dressing, and prevents irritation of the skin. It was found necessary to dress the patient not more than once or twice a day. The gauze wick in the tube was changed once in twenty-four hours.

### THE TREATMENT OF GRANULATING WOUNDS.

VAN ARSDALE (New York Medical Journal, July, 1893) holds that granulating wounds should be treated much in the same manner as are primary aseptic ones. Iodoform gauze, and over this a layer of cotton and a bandage, constitutes the dressing commonly applied to granulating wounds. As a consequence of this dressing inflammation is increased from the accumulation of secretion on the wound and in the surrounding tissue, conditions for which the familiar word retention may be used. further disadvantage of the iodoform gauze is found in the fact that it sticks to the wound and cannot be removed without lacerating the granulations.

The form of retention just described may be obviated by dampening the dressing with some aqueous solution and covering it with protective impermeable to air. This dressing is in general use for some infected and sloughing wounds, where it certainly renders excellent service. For general use the moist dressing is not satisfactory, since from its warmth and moisture it acts as a poultice, increases the secretion from the wound, causes the granulations

to become exuberant, brings about eczematous conditions of the skin, etc. Acute œdema with exfoliation of the epidermis is of common occurrence. The proliferation of all kinds of bacteria in moist dressings soon renders them putrid, hence they must be frequently changed.

Certain wounds may be treated in a manner somewhat similar to that employed in securing healing under Schede's moist blood-clot. A piece of gutta-percha tissue is placed over the wound; over this absorbent material is held in place by a bandage. Wounds treated in this manner, as seen by the author, have not run a satisfactory course.

Oil dressings are objectionable for obvious reasons. Castor oil is, however, an exception to the rule: it is soluble in alcohol, it will take up fifty per cent. of Peru balsam, it is viscid enough to remain for a long time in contact with the wound, and will remain in those portions of the dressing on which it was originally spread. It does not prevent absorbent gauze from taking up the secretions of the wound, and thus does not interfere with drainage. However much a granulating wound may discharge, the wound always appears clean and dry when the oil dressing is removed. The oil does not appear to turn rancid when mixed with Peru balsam.

To sterilize oil it is necessary to subject it to a temperature of 160° C. for two hours. For general use, a four- or five-per-cent. solution of balsam in the oil is sufficient. Its application to a wound is simple. A bunch of plain or sterilized gauze-is spread with this solution over an area somewhat larger than the wound to be dressed; this is most readily accomplished by means of a large brush. The solution should permeate from four to six layers of the gauze. The gauze is now simply laid on the wound, so that the oil comes in contact with it; then a protective layer of rubber tissue or oil paper is spread over all, and then the bandage applied. Any of the antiseptic or astringent powders can first be dusted over the wound; the oil dressing will then prevent the formation of a crust. As a dusting powder subiodide of bismuth is to be preferred. The following combination is frequently used:

> Balsam of Peru, gr. xx; Iodoform, gr. x; Castor oil, f3i.

This dressing need not be changed oftener than twice a week. It does not actively prevent suppuration; it simply drains the wounds and keeps them in a clean condition.

#### OBSERVATIONS ON THE IMMEDIATE TREATMENT OF NON-PREVENT-ABLE MISCARRIAGE.

MACEVITT (Brooklyn Medical Journal, September, 1893) advocates the following plan of treatment in non-preventable miscarriage:

- 1. Curettement, as a rule primary dilatation becoming necessary.
- 2. Vaginal tampon and the administration of oxytocics.
- 3. Oxytocics with the application of an external pad and a bandage, and fluid extract of ergot internally.

Curettement is now generally adopted by the progressive members of the profession, yet there is a doubt as to its always being advisable. The author prefers to keep the patient under observation for a few days before resorting to it, and thus judge of the necessity of its performance.

He thinks that the sharp curette in unskilled hands is a dangerous instrument at this time.

The old treatment of tamponing the vagina is by no means obsolete, and when properly performed has an individual value which no procedure can supplant. Packing the vagina with cotton is both useless and dangerous. The hemorrhage is always more alarming in the early stage of the case. It is in this stage that the kite-tail tampon finds its great utility, acting not alone as a mechanical hæmostatic, but as an excitant to uterine contraction.

If the hemorrhage is not severe, external pads of sterilized cotton, held in position by a bandage, will serve a good purpose in preventing anxiety on the part of the patient and acting as a barrier to the admission of germs from without.

Morphine is administered for the double purpose of relieving the pain, softening the cervical tissue, and facilitating the dilatation of the If the membranes are found protruding, by a gentle twisting motion with two fingers they can generally be removed. If the membranes do not present, yet are perceptible to the touch, the os should be dilated by the As soon as this can be accomplished the uterine cavity is irrigated with a five-percent. solution of carbolic acid, or 1 to 1000 of biniodide of mercury. When the membranes are retained beyond the reach of the finger, provided there be no fetid discharge, vaginal douches of the same strength should be used, a kite-tail bandage should be applied, and twenty-minim doses of ergot should be given. This treatment is continued until the contents of the uterus are expelled, or the temperature, pulse, or discharge demand curettement.

#### A CASE OF NERVE SUTURING.

BEALE (Medical Press and Circular, August, 1893) reports the case of a girl, aged six, who had received a severe wound of the wrist and palm. All the structures passing from the wrist to the hand had been divided, except the flexor carpi ulnaris tendon and the ulnar nerve, which was only partially severed. Four hours after the injury, which had been caused by glass, the wound was enlarged, thoroughly cleansed, and the arteries secured. dons were then sutured with fine catgut, a tension stitch being used in each case. distal ends of the flexor sublimus tendon had retracted so far that they could not be reached without a lengthy dissection, and as the prolongation of the operation was not advisable. the proximal ends of the tendon were sutured to the palmar fascia at the wrist. The median nerve had been lacerated so extensively that it was necessary to excise about one inch of it. and then with extreme flexion the divided ends were distant about half an inch. A strong catgut tension stitch and six small stitches of the finest catgut were inserted through the edges of the divided nerve. The partially severed ulnar nerve was then stitched and the external wound closed with a continuous The hand was dressed in a flexed position by means of a dorsal splint. wound healed in nine days, and at that time there was complete anæsthesia over the area supplied by the median nerve. In about four months the child complained of a tingling sensation in the first four digits.

Soon afterwards she could feel the prick of a pin when applied to the fingers, but was unable to localize it correctly. At the end of eight months sensation was practically perfect. All movements of the hand were good, except flexion of the two terminal phalanges of the second, third, and fourth digits.

### THE VALUE OF COPAIBA IN CHRONIC CYSTITIS.

CHEVERS (Medical Press and Circular, August, 1893) reports the case of a lady, aged thirty, who had suffered from cystitis for about two years. All the urinary symptoms were characteristic. On examination, there was tenderness on pressure over the hypogastrium, but no symptoms of vaginitis or urethritis. Treatment was commenced by giving sedatives and alkalies, but without effect.

Irrigations with boric acid were tried, but were ineffectual. It was then decided to try copaiba, and the following mixture was ordered:

R Tr. collinsoniæ, zvi;
Copaibæ, ziii;
Liq. morphinæ, zss;
Liq. potassæ, zss;
Ol. menth. pip., miii;
Aq. camph., q. s. ad zvi.
A tablespoonful to be taken every four hours.

This treatment entirely relieved the pain.

### ANÆSTHETICS AT THE LONDON HOSPITALS.

An editorial in the columns of the *Medical Press and Circular*, August, 1893, in speaking of the best anæsthetic to be employed, states that there is undoubtedly a great leaning in favor of ether. Out of the eleven London hospitals there are six in which ether is administered as a routine practice; in four it is common to administer gas before the ether. In two hospitals the use of ether and chloroform seems to be about equally balanced.

Ether is considered by the majority to be the safest anæsthetic, and is in most cases administered by means of the Clover inhaler. With few exceptions, it is thought best to give chloroform to young children, old people, and to patients suffering from lung-trouble. Hewitt has used ether in a very large number of cases of bronchial and pulmonary troubles. Moss, of King's College, has used the A.C.E. mixture for twenty-three years without an accident.

Careful attention to the breathing is regarded as of paramount importance, ranking even before the observation of the pulse.

### EXTIRPATION OF A TUMOR OF THE PROSTATE.

VON DITTEL (Medical Press and Circular, August, 1893) relates an instance of extirpation of a prostatic tumor. The patient, a man aged thirty-two, strongly built, had for some time suffered from hæmaturia. It was ascertained that no stone was present, but there was felt in the vesical region, through the abdominal wall, a hard, tense, oval tumor. Rectal examination showed great enlargement of the prostate. On endoscopic examination, a knobby prominence was seen on the right wall of the bladder, from which blood was oozing. After opening the bladder by the high operation, the bleeding prominence was removed by a sharp spoon, leaving a perfectly smooth surface. The coccyx was then enucleated, the capsule of the prostate opened, after which the whole tumor was easily separated. The cavity remaining after removal was filled with iodoform gauze, and the bladder was drained. A communication between the cavity of the wound and the bladder was not distinguishable, but in a few days a small opening was noted; this closed completely. The successful result was due to the fact that the urethra was not, as is generally the case, embedded in the prostate, but only lay in front of it, so that the tumor could be removed without injury to the urinary tract.

#### SURGERY OF THE KIDNEY IN CHILDREN.

ALDIBERT (Revue Mensuelle des Maladies de l'Enfance, tome xi., 1893) contributes a careful study of the surgical affections of the kidney in children. But three cases of wounds of the kidney are cited. In each instance the kidney was excised and the cases recovered. In considering contusions and lacerations of the kidney the author holds that in the latter form of injury there is in children more frequently than in adults a corresponding tear in the peritoneum, thus allowing of an abundant intraperitoneal exudation of blood. From this it follows that hemorrhage is liable to be freer and there is less chance of its spontaneous cessation.

In the treatment of these cases the transperitoneal route should be chosen, since thus only can the toilet of the peritoneal cavity be made. The indications during the hemorrhagic period are to search for the source of bleeding if the hemorrhage is continuous and severe, and to free the bladder of clots if these cause retention. The checking of hemorrhage is sometimes extremely difficult. Thus, in nine cases of death, seven perished within eleven hours of the time of injury,—that is, almost too soon for intervention. The two children who lived thirty-six and sixty hours might have been operated upon, but in them the hæmaturia was very slight, and the intraperitoneal bleeding was the cause of death. tremely difficult at first to differentiate the symptoms of shock from those of hemorrhage. Weir's case is cited. Twenty hours after injury symptoms of hemorrhage were pronounced; laparotomy was performed, and the kidney, dislocated into the abdominal cavity and lying near the iliac crest, was removed. Hemorrhage persisted, and was found to come from a ruptured spleen, which was in turn extirpated. This child perished.

The bladder should be emptied of clots by aseptic aspiration, or, when this is not successful, possibly by hypogastric section.

Following the hemorrhagic period, after contusion or rupture of the kidney, there is liable to occur renal or perirenal suppuration. When this has become manifest, free incision is indicated, preferably by the lumbar route.

Traumatic hydronephrosis is in reality a pseudo-hydronephrosis, since the disease is not due to the distention of the kidney pelvis, but rather to an extravasation into the perirenal tissues. It is somewhat common in children. The history of these cases is usually as follows: After traumatism, with slight hæmaturia, the patient recovers. In from two to eight weeks he exhibits a large tumor which contains a liquid analogous to urine. There is no febrile reaction. The tumor disappears, sometimes spontaneously, usually after puncture or incision.

In regard to the treatment, the author holds that one or two punctures should be made. These failing, incision should be practised.

Congenital unilateral hydronephrosis has been subject to operation eleven times. five cases nephrotomy was performed. perished, one was completely cured, and three recovered with fistulæ. One of these was subject to nephrectomy five years later, and re-Of six primitive nephrectomies, all recovered. Hence it would seem clear that in case of congenital hydronephrosis primitive nephrectomy is the method of choice,—that is, when the operator can be sure that the unaffected kidney is healthy. The abdominal incision should be preferred, since thus exploration of the other kidney is permitted and, moreover, enucleation of the cyst is rendered easier.

### A NEW TREATMENT FOR INOPERABLE UTERINE CANCER.

BERNHART (Centralblatt für Gynäkologie, No. 39, 1893), basing his treatment on the fact that salicylic acid exhibits a strong affinity for epithelium, has employed this remedy in the treatment of epithelial new formations. ruary of this year he began making parenchymatous injections of a solution made up of six per cent. salicylic acid in sixty per cent. of alcohol into the substance of an inoperable cancer of the cervix. Discharge and pain ceased almost immediately and there was marked retraction of the tumor. In four days the injection was repeated, and this treatment was continued for three months. At this time all subjective symptoms had disappeared, appetite had returned, there was no more bleeding, and the temperature remained normal. As to the tumor itself, it diminished markedly in size and its ulcerating surface became cicatrized. Encouraged by these results, five other cases were treated in a similar manner; in all there was marked improvement. Injections

were made by means of a syringe supplied with a curved needle of small calibre. About two cubic centimetres of the injection solution were employed. The induration was injected in several places, a few drops being driven into its substance at each point of injection. In some cases the pain was severe, in others treatment caused almost no suffering. Following treatment there was some febrile reaction.

#### CHLOROBROM IN SEA-SICKNESS.

HUTCHESON (The Lancet, August 12, 1893) states that he used chlorobrom in all cases of sea-sickness to which he was called while ship's surgeon to the steamship "Rimutaka," during a voyage to and from New Zealand, and speaks of its action as follows: He always gave it in three-drachm doses in the second stage of this distressing ailment, when retching, headache, depression, and sleeplessness were the prominent symptoms, the hour selected for administration being ten P.M., in order to secure a good night's rest. The results were very satis-The chlorobrom was always retained and was always followed by sleep (generally The patients awoke much refreshed in the morning, with an appetite and able (except on one occasion) to eat and retain something light.

#### Reviews.

THE PRAIRIE GROUND-SQUIRRELS, OR SPERMOPHILES OF THE MISSISSIPPI VALLEY. By Vernon Bailey. Prepared under the direction of Dr. C. Hart Merriam.

Washington, D.C.: United States Department of Agriculture, 1893.

This "Bulletin (No. 4) of the United States Department of Agriculture" gives an interesting account of the various ground-squirrels found in the Mississippi Valley, and contains interesting remarks as to the post-mortem conditions found in various species, with especial reference to the food of that species. He also considers the best means to be resorted to for the destruction of these animals when they are in such great numbers as to become a pest.

RHEUMATISM: SOME INVESTIGATIONS RESPECTING ITS CAUSE, PREVENTION, AND CURE. By Percy Wilde, M.D.

London: Bale & Sons, 1893.

In this little book of seventy-two pages Dr. Wilde has recorded his observations concerning this very frequent and interesting disease. He quotes a large number of statistics, show-

ing what, unfortunately, we already know,—the futility of drugs in some cases of rheumatism,—and highly recommends the application of a hot wet-pack as a remedial measure. The book contains several full-page illustrations of the way in which the patient should be wrapped, and one of a vaporarium with which the patient is surrounded. This consists essentially of a metal cover large enough to form an arch over the patient while in bed and to extend from the shoulders to the feet. The cover is a double one, and the space between is filled with boiling water. In this way the patient practically receives a miniature Turkish bath.

Dr. Wilde is apparently not a very rigid adherent to antirheumatic dietary, and he states that even in gout he is frequently obliged to feed his patients on beef and port-wine. Not that this is an ideal treatment, but because the typical treatment has prevented the patient from coping with his disease.

NEW TRUTHS IN OPHTHALMOLOGY. By G. C. Savage, M.D. Thirty-two illustrations. Published by the author.

Printed by the Publishing House of the M. E. Church, 1893, South Nashville, Tenn.

This little book of one hundred and fifty-two pages is composed of three parts. The first consists of a collection of Dr. Savage's wellknown papers on the harmonious symmetric action of the oblique muscle in all cases of oblique astigmatism, insufficiencies of the oblique muscles and how to correct them, the relationship between the centres of accommodation and convergence, and rhythmic exercises in developing the ocular muscles. Part II., which is entitled "Contributions to Old Studies," the safe line to be drawn between operative and non-operative cases of heterophoria is described, and the necessity for complete suspension of accommodation by mydriatics in the adjustment of glasses is advocated. Part III. contains five papers pertaining to operative ophthalmic surgery.

The volume is neatly printed in type of an agreeable size. Those unacquainted with Dr. Savage's views on the topics discussed in this book should read it. He has the courage of his convictions and is an earnest advocate.

A TEXT-BOOK OF OPHTHALMOLOGY. By William F. Norris, A.M., M.D., and Charles A. Oliver, A.M., M.D. Six hundred and forty-one pages.

Philadelphia: Lea Brothers & Co., 1893.

The task of the reviewer of this latest American text-book of ophthalmology is an easy or difficult one, according to the manner in which

he proposes to deal with it. If he wishes to give the impression the work makes upon him as a whole, he would only have to say that for the student, either general or special, it will take rank with the very best. If he undertakes to consider it in detail, he will find himself in a discussion of all the debatable questions in ophthalmology, for the authors have left none untouched. This, however, is nothing more than was to be expected from the men who wrote it and the years which they have given to its composition. They have grudged neither time nor labor; and their book represents not only these, but, in addition, their own individuality in a greater degree than is usually found in text-books.

The subjects are grouped in such a way that each author has the open responsibility of his own work. The first ten chapters, comprising embryology, anatomy, optics, physiology, examination of the eye and its functions by the various methods, and the anomalies of refraction, are by Dr. Oliver, and they are thoroughly done. It is perfectly apparent that infinite pains have been taken in their preparation, and we do not recall any work of its size in which they have all been so comprehensively treated. The mathematical student will be specially delighted to find the problems in optics made clear without algebra. This is done by means of diagrams, and they are the best, as a whole, that we have seen, and there is a larger number of them, even, than in Prentice's little book, which we have hitherto regarded as the best of its kind. The short rėsumė of the embryology of the eye is most excellent. We are pleased to note, among other things, that the new method of measuring prisms by their deflective power has been adopted in the place of the old unscientific angle system. In fact, everywhere we find an endeavor to bring the subject up to date, and in this Dr. Oliver has been unusually successful. We do not mean, of course, that the expert and special investigator will find everything treated in the precise manner he would himself have adopted, but nothing has been slurred over, and the student will find it a correct and, more important still, a suggestive guide.

For the second, or purely clinical, part, Dr. Norris assumes the responsibility, and that fact is sufficient to enlist the earnest attention of every ophthalmologist. We have recorded here the results of the observations and experiences of many years of the active life of a man whose honest endeavor has always been to find the truth, and as such its value to us is immeasurable. We expected that it would be con-

gonorrheal iritis, and in one case of infectious corneal ulcer.

Grandclement considers that subconjunctival injections of hydrargyrum have most effect "in cases of serious or desperate affections of the middle or vascular coatings of the eye,—namely, the iris and the choroid,—and consequently, also, in their milder forms." He does not think much of their efficacy in affections of the cornea "by infiltration," nor in diseases of the internal layers of the retina.

The result of all these observations is in favor of subconjunctival injections of hydrargyrum, and especially sublimate, in that class of ocular diseases which may be traced to acute, but especially chronic, infection of the entire uveal tract. Myopic choroiditis is not affected by the treatment, because not of infectious origin. The same is true of sclerotitis and simple parenchymatous keratitis, except where it is complicated with iritis or choroiditis. The best results seem to have been observed in severe and recurring cases of iridochoroiditis which baffled all other modes of treatment.

We will now consider the effect of these injections in cases of infectious keratitis and conjunctival granulations.

Gossetti has found this remedy very effective in cases of contagious ulcers of the cornea; frequently the first injection would arrest the development of the ulcer, and a second one would be followed by an improvement which showed itself in the diminution of the hypopyon and the healthier condition of the base of the ulcer. Though the progress of recovery is slow, a complete cure is often effected without having recourse to a third injection. The injections are ineffective, however, where the ulcers are large, with ragged edges, and the purulent discharges more than half fill the anterior chamber.

Van MILLINGEN has tried subconjunctival injections in the hypertrophied sac in but two cases of trachoma; the reaction was such that he gave up the process, which he considers dangerous and much inferior to operation with the roller-forceps as recommended by Knapp.

Dransart arrived at very different conclusions, but he added scarification and brushing, or brushing alone, to the treatment.

There are other substances, especially cyanuret of mercury and trichloride of iodine, which may be employed for subconjunctival injections.

ROGMAN thinks that the superiority of the treatment by injections over the ordinary methods shows itself in cases where contagion,

after passing through the external membranes, penetrates to the deeper tissues of the eye: irido-choroiditis after lenticular extraction, septic complications of cystoid scars, hypopyon, purulent accumulations in the vitreus consequent upon traumatisms, etc. For, if we hesitate to use the galvanic cautery, we know how unreliable in their action are internal treatment, bathing, ointments, etc., usually prescribed.

In nearly all his injections he uses one-half a Pravaz syringeful, and repeats two or three times, according to necessity. He uses solutions of cyanuret of mercury at 1 to 1000, 1 to 2000, or 1 to 4000, which appears to him to be more reliable than sublimate. He also uses a solution of trichloride of iodine at 1 to 1000 in a physiological solution of sea-salt.

ROGMAN, although satisfied with certain results in cases of severe ocular infection, does not feel inclined to apply subconjunctival injections to an unlimited extent.

GALLEMAERTS does not consider trichloride of iodine in any way superior to sublimate.

PFLUEGER has given up the use of mercury in subconjunctival injections, on account of the great and protracted irritation which it produces, and uses instead trichloride of iodine, of which he takes a full Pravaz syringe (1 to 2000) twice a week.

The following are the cases in which he used these injections, with the results obtained:

- 1. Retrobulbar Neuritis.—Result indifferent.
- 2. Detachment of the Retina.—The injections at first greatly increased the field of vision, but the effect was not lasting.
  - 3. Acute Irido-cyclitis.—Negative result.
- 4. Acute Sympathetic Irido-cyclitis.—Injections combined with punctures in the anterior chamber improved the condition of the eye suffering by sympathy for two or three weeks. The pupil dilated, exudations partly subsided, and visual acuteness became greater. But after repeated relapses he abandoned the treatment and returned to mercurial frictions, which failed to prevent phthisis of the bulb; there remained light perception.
- 5. Chronic Sympathetic Irido-cyclitis.—In two cases the eyesight of both eyes was much improved by subconjunctival injections of trichloride of iodine.
- 6. Serous Iritis.—In one case the injections appeared to be beneficial, in another they did not at all check the ordinary development. In a third he suspended the injections on account of the increasing intraocular tension.
- 7. Sclerotitis. In theory the injections should have a marked influence on this dis-

ease, but their effect was slight, and he fell back on the galvanic cautery.

- 8. Acute Diffuse Trachomatous Keratitis complicated with Numerous Small Abscesses on the Cornea.—In this disease the injections, combined with friction of the conjunctiva with a solution of trichloride of iodine (1 to 1000), cleared away the opacity of the cornea in a relatively short time. The best results I have yet obtained from these injections have been in cases of choroiditis and irido-choroiditis with or without opacity of the vitreous humor.
- 9. Macular Retino-choroiditis and Disseminated Choroiditis.—Result in general satisfactory and encouraging. Sometimes the treatment was supported by other remedies, especially iodide of potassium. In these cases the injections were made in one eye only, the other one being used as a gauge.
- ro. Chronic Disseminated Choroiditis of Long Standing: Four Cases.—In two cases the condition had become stationary and there was no change; in two others vision noticeably increased.
- 11. Irido-choroiditis with Opacity of the Vitreous Humor.—Here the treatment is very effective.

We will now present the opinions of those whose experiments with this mode of treatment were partially or wholly unsuccessful.

Masselon states that subconjunctival injections have frequently been used at his clinic,—a solution of sublimate at 1 to 1000 and from one to several drops to a dose. As the local mercurial treatment was usually applied in conjunction with a general treatment, it is hard to pronounce upon the real value of subconjunctival injections of mercury. However, in those cases where the local treatment alone was pursued, no good results could be noticed. He never met with any of those sudden improvements brought about by a very small number of injections, as was reported.

LAQUEUR has used subconjunctival injections of sublimate in syphilitic iritis and chronic central choroiditis, and is not favorably impressed by the new process; injections of  $\frac{1}{10}$  milligramme, several times repeated, had so little effect on the progress of the disease that he resumed the use of mercurial friction.

DIANOUX has used injections of sublimate in the following cases: Three cases of macular choroiditis, seven of irido-choroiditis, one recent detachment of the retina, one chorioretinitis with syphilitic relapse, one hereditary syphilitic case of interstitial keratitis.

The number of injections varied from five to twenty. In spite of cocaine, the pain was

always intense and the reaction variable. two cases the reaction was such as to cause him serious anxiety, and once distrophic keratitis followed by central leucoma was developed. Ophthalmoscopic lesions were never affected to any appreciable extent. In irido-choroiditis the result was absolutely negative, also in a relapse of retinitis and in detachment of the retina. A case of interstitial keratitis remained in statu quo after a slight improvement in the beginning. In eleven out of thirteen cases of macular choroiditis there was no result. Twice there was a noticeable and rapid improvement in the eyesight, but in these two cases there was simply cedema of the retina in the neighborhood of recent pigmentary patches.

He does not think that with such doses there can be any antiseptic action, nor even any modification of the tissues of the eye affecting their resistance to pathogenous agents. The effect is, he thinks, analogous to that produced by injections of terebinthina, derivation or revulsion; a moral effect of suggestion in the patient, perhaps also of auto-suggestion in the physician.

Still, he firmly believes in the future of subconjunctival injections, and is perseveringly experimenting with the nature of solutions, doses for injections, and their indications.

Professor Haab, of Zurich, tried the injections in ten cases of interstitial keratitis, with no result. Dr. Fick, of Zurich, used the same injections in three cases of cyclitis, with no better success.

Terson, in a case of syphilitic chorio-retinitis, made two injections, several days apart, using three drops of sublimate at 1 to 1000, and each time there appeared under the conjunctiva a bleb the limits of which apparently defined the parts of the episcleral tissue touched by the hydrargyric solution. Each time there was produced serous chemosis to such a degree that a slight scarification brought out several drops of citrine-colored serum. This patient was undergoing mercurial friction and taking 5 grammes of iodide of potassium daily.

Is it possible that the iodide, impregnating all the tissues and combining with the sublimate of the injection, formed biniodide of mercury, infinitely more caustic in this pure state than sublimate at 1 to 1000? We know that such a result has frequently been observed on the surface of the conjunctiva, and particularly in the lower sac, when we blow calomel between the eyelids of a patient who is at the same time undergoing an internal treatment of iodide. In any case he advises using a very moderate dose of the solution of bichloride, or

no particular portion of it can be considered as a distinct addition of new material, nearly every chapter shows that it has been carefully revised. We think, however, that the American authorities have been given a comparatively scant recognition. The book will, of course, continue to be the standard work of reference to neurologists.

A TREATISE ON THE SCIENCE AND PRACTICE OF MID-WIFERY. By W. S. Playfair, M.D., F.R.C.P. Sixth American from the eighth English edition. Edited, with additions, by Robert P. Harris, M.D. Illustrated. Philadelphia: Lea Brothers & Co., 1893.

There are two books in the English language which are facile princeps in obstetrics for the student and practitioner,—one by Dr. Lusk, of New York, which has already been favorably reviewed in these columns; the other by Playfair, of London, which is edited in this country by Dr. Robert P. Harris, so well known to those who are interested in the diseases of women, through his exhaustive yet tireless researches in connection with Cæsarean section and other gynæcological operations. To those who are unfamiliar with Playfair's work it will be interesting to learn that the first one hundred and thirty-six pages are devoted to the female generative apparatus, ovulation and menstruation, conception and generation, while the next one hundred and thirty pages are devoted to normal and abnormal pregnancy. The portion of the work devoted to the subject of labor covers two hundred pages, that upon obstetric operations one hundred more, while the subject of the puerperal state The touch of Dr. Harris is finishes the book. found on almost every page, and he frequently throws much light upon disputed points through his parenthetical additions to the book. illustrations are unusually good and the colored plates show exactly the conditions which they are designed to represent, which is saying a good deal when we recollect the miserable plates which are sometimes met with in medical works.

THE MEDICAL STUDENT'S MANUAL OF CHEMISTRY. By R. A. Witthaus, A.M., M.D., Professor of Chemistry and Physics in the University of the City of New York, etc. Fourth edition.

New York: William Wood & Co., 1893.

After announcing the fact that a new edition of this excellent work has been issued, little remains to be said.

It has had large sales, is widely used, and deserves the praise commonly given it. The tendency is to increase the bulk with each new edition. The medical student would pre-

fer a diminution. With all he has to learn, there is much here that will be lumber to him, in the details concerning chemicals of no medical nor pharmaceutical interest. To be sure, full knowledge is of value, but a manual for medical students need not contain so much that is non-medical. It will find its true place when it is used as a reference-book to supplement and extend knowledge already obtained from more elementary works or in the college lecture-hall and laboratory. For this purpose its contents are neither too compendious nor too voluminous.

J. W. H.

SUPPLEMENT TO THE REFERENCE HAND-BOOK OF THE MEDICAL SCIENCES. By various authors. Illustrated by chromo-lithographs and fine wood-engravings. Edited by Albert H. Buck, M.D., Volume IX.

New York: William Wood & Co., 1893.

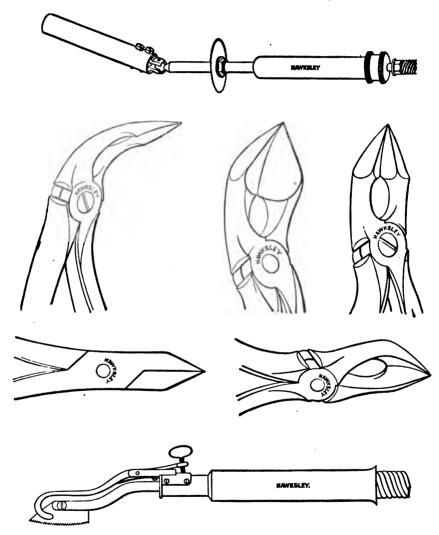
As is well known to the medical profession, the Reference Hand-Book of the Medical Sciences, published by William Wood & Co., is to medical literature what the Encyclopædia Britannica is to literature in general, and in the same way as it has become necessary to publish supplements to the larger work, so it has been thought wise to print a supplement to the eight volumes of the Reference Hand-Book already in the hands of so many physicians. To those who are already possessed of this valuable work it is not necessary to do more than state that the supplement is not only equal but superior to the original volumes, and to those who are not so well acquainted with it we can give the best idea of its value by stating that the able editor has called to his assistance in the preparation of this supplement a large number of contributors who, in nearly every instance, are known to the profession by reason of their special acquaintance with the subjects which An early article in the volume is a complete one upon Acromegaly, to which is appended a most interesting and complete bibliography of the disease from 1772 to 1892; and the second is one upon Adiposis Dolorosa, by Dr. F. X. Dercum, who was first to describe this extraordinary dystrophy. The illustrations, taking them as a whole, are unusually good. They are scattered copiously through the book and add much towards rendering the text lucid. In the article upon the Brain. however, the cuts are very rough, particularly that upon page 103. In the same way that the Encyclopædia Britannica contains information of all the various sciences, this supplementary volume extends its usefulness to all subjects sufficiently related to medicine to be of value to the practising physician. One of the closing

articles of the book is a complete one upon Wound Treatment, by Charles N. Dowd; another of great importance and interest is that of Dr. W. W. Keen upon the Surgery of the Spinal Cord. Finally, in the form of an addendum, is a short article upon the Plasmodia Malariæ, by Meade Bolton, of Baltimore.

A carefully-prepared and complete index closes a volume which is a credit to American medicine and American medical publishers.

operations of cerebral surgery for which he has achieved such a high reputation. They were exhibited for the first time in August at Newcastle, and I had intended to describe them in connection with the meeting of the British Medical Association in that city, but I have only just succeeded in obtaining the blocks, which have been specially drawn at my desire by Messrs. Hawksley:

1. A Double-Eyed Needle.—This is a great



## Correspondence.

## LONDON.

(From our Special Correspondent.)

Some New Instruments.—By the kindness of Messrs. Hawksley, I am able to present readers of the GAZETTE with a few illustrations of some instruments which have been devised by Professor Horsley, and are used by him in the various

convenience in cases in which it is wished to pass two ligatures simultaneously and side by side, as in the double ligature of a bloodvessel.

2. Series of Prismatic Bone Forceps.—These are, as the illustration shows, made with triangular or prismatic cutting blades, and can be manipulated with far greater accuracy than most of the ordinary forms. They are very strong without being heavy, a point of great importance when dealing with the dense yet thin bones of the skull.

3. The Mechanical Circular and Straight Saw (alluded to by me in my last letter).—The shaft of this is constructed similarly to that of a dentist's drill, the motor apparatus being a small electric motor controlled by a switch either in the handle of the saw or separate, so that it can be worked by an assistant. The motor is worked by means of accumulators. The saws are made either to rotate or oscillate backward and forward at a high rate of speed, and under these conditions a very slight pressure on the bones enables them to be cut through with great accuracy. Trephines or drills can be worked by the same mechanism, and the absence of the need for strong pressure is a great safeguard against cutting too deeply in dividing the bones of the skull.

Two days ago I was present at a very pleasant festivity held in honor of the birth of a new medical society,—the Society of Anæsthetists. The event was signalized by a dinner, followed by music and song of a most pleasing description. In the course of the speeches which followed, the objects of the Society were well put forward by Dr. Dudley Buxton, Anæsthetist to University College Hospital. He pointed out that the anæsthetist was the necessary outcome of the daring and far-reaching surgery of the present day. Some people there were who objected to the very existence of anæsthetists as specialists, maintaining that "he who has walked the hospitals" may give chloroform or ether ad nauseam if he please, and that nothing else is necessary. Now, the speaker maintained that the administration of an anæsthetic literally ad nauseam was actually what was to be feared if its administration were left in the hands of a not specially instructed medi-A student, before he is let loose on society with powers to kill or cure them, is required by all of our examining boards to show that he has had special and careful instruction in the simple operation of vaccination, but he need never have had a chloroform or ether mask in his hands, and there was certainly far more danger in the use of either instrument by such inexperienced hands than in the introduction of a particle of vaccine lymph by an individual similarly instructed. To further reform in these matters and to make instruction in administration of anæsthetics compulsory before the license to practice is conferred on anybody was one of the chief aims of the new Society. A second point was this: the anæsthetist of the present day must be something more. He must be a skilled surgeon and a physician as well as able to give chloroform. From the time that

the inhalation of the anæsthetic commences till the surgeon begins to operate, the life of the patient is entirely in his hands, and it is his business to keep the patient well until he has recovered from the anæsthetic. Manual dexterity is eminently necessary, and absence of skill as a physician would certainly not minister to the patient's just requirements during the continuance of anæsthesia. The second aim of the Society will, therefore, be to encourage discussion on points bearing on anæsthesia, and to further research on such matters. Thirdly and lastly, as work is best done when mingled with a certain amount of relaxation, it was proposed to relieve the extreme heaviness of matters scientific by periodical cultivation of the muses. If the occasion at which I was present be a fair sample of what is to be done by the Society. this unique venture in the history of medicine will certainly successfully fill the place it is intended to occupy, and I for one wish it suc-

A new journal has this day appeared, called the St. Bartholomew's Hospital Journal. It is to be a means of placing on permanent record such clinical and other work as is done in the hospital, which, in spite of the well-known "Hospital Reports" and the general medical journals, has hitherto, in the absence of a special medium, been practically buried in the wardbooks of the hospital. It will also record the various clinical lectures which are from time to time delivered. It has always been a matter of regret that such lectures could not be published, for students cannot invariably be present during the whole time of their delivery, especially if they have other hospital duties, and the very nature of some of the lectures renders it desirable that their subject-matter should be more carefully studied than it can be at a single hearing. The journal will, further, aim at maintaining that esprit de corps so desirable among any large body of men.

## CORRIGENDUM.

In the review of the United States Pharmacopoeia published in the October number of the Therapeutic Gazette the reviewer stated that the strengths of the tinctures of physostigma and stramonium-seed had been decreased, when it should have been stated that they had been increased to nearly double the strength of the Pharmacopoeia of 1880; the dose, therefore, is about one-half the quantity of the tinctures which have been official during the last ten years.

## INDEX TO VOLUME IX., THIRD SERIES. (WHOLE SERIES, VOLUME XVII.)

PAGE	1
Abadie's Method for Treatment of Migratory Ophthalmitis 201	Barr
Abdomen, Experimental Contributions to Surgery of	Batl
Abdominal Section, After-Treatment of	, M
Abortion followed by Consis	Bee
Abadie's Method for Treatment of Migratory Ophthalmitis	Berl
Treatment of Incomplete 84	Bick
Two Cases of Poisoning by Self-Administration of "Dia-	Bich
chylon" 832	Blac
1 wo Cases of Poisoning by Self-Administration of 'Dia- chylon'	l
Acne, Acne Rosacea, Seborrhoea, and Sycosis	D.,
Aconte in Various Forms of Cardiac Disorder	Blai Blen
Acute Parenchimeters Membris	Blep
Preumonia Ice in the Treatment of	
Agathine—New Antineuralgic	Blep
Air-Passages, Treatment of Cut-Throat Wounds of	Bloc
Albuminuria 169	Bora
Alcohol on the Circulation	Bori
Question from Physician's Stand-Point 842	Boy
Alcoholism, Treatment of Acute	Brai
Alkalaide Employment in Oahthalmalagu of Mirtures of	Brai
Several	Brig
Aloin, Cathartic Acid, Colocynthin, and Citrullin as Laxatives.	Bros
Local Application per Rectum of	Bi
Several 340 Aloin, Cathartic Acid, Colocynthin, and Citrullin as Laxatives, Local Application per Rectum of 703 Alopecia, Treatment of, with Essence of Wintergreen 567 Altitudes in Treatment of Pulmonary Tuberculosis 688 Alumnol in Gonorrhoea 350 Amenorrhoea, Treatment of, in Young Girls 988 Ansemia following Post-Partum Hemorrhage by Hypodermoclysis 185	Bron
Altitudes in Treatment of Pulmonary Tuberculosis 688	_
Alumnol in Gonorrhœa 350	Bron
Amenorracea, i reatment of, in Young Girls	D
clusia following rost-rartum riemorrnage by riypodermo-	Brov
Pernicious Antisentic Treatment of	Bruc
Ansesthesia.	Ac
185   Pernicious, Antiseptic Treatment of   335   Ansesthesia	Bub
produced by Combination of Bromide of Ethyl and Chloro-	Bub
form 324	Bull
Ansesthetics at the London Hospitals	
Serviction on Potalisian assuming under	Cæs
produced by Combination of Bromide of Ethyl and Chloro- form	Caff
Anal Fistula, Immediate Union after Division 627	Calc
Analgesics, Influence of some of the New, in increasing Sus-	
ceptibility to Cold	Calc
Anastomosis by means of Senn's Approximation Plates 61	Calo
Angina Pectoris, Observations on Nature and Treatment of 619	
Aniline-Poisoning, Unusual Case of.         123           Animal Extracts as Therapeutic Agents.         543           Antipyretics, Untoward Effects of.         117           Antipyrin Exanthem, with Ulceration.         253	
Antiquestics Untoward Effects of	Cam
Antipyrin Exanthem with Ulceration	Cam
in Ocular Therapeutics	Cano
on Certain Forms of Atrophy of the Optic Nerve 853	1
Phenacetin, and Phenocoll, Comparative Action of, on the	
Circulation and Bodily Heat 192	•
Antisepsis in Uphthalmic Surgery 608	
Antipyrin Exanthem, with Ulceration	- 2
Mixture, A New	
Ointment, Adhesive	Cane
Solutions, Intraocular Injection of	Cant
Antispasmine, Use of	Tr
Antispasmodic, An 114	Caps
Americal Newster following Hea of Famile & Solution	Carb
Arterial Cardionathies	Carb
Asaprol. Therapeutic Uses of	Card
Ascites 250	
Arterial Cardiopathies	Casc
Asepsis in Operations performed on the Eyes 623	Cata
in Opnthalmic Department of Würzburg University 630	- 4
Ashton Thomas G. Has of Nitro Classical Ashton Salarada	,
Aspidospermine in Dyspnes	,
Atkinson, I. E., Venesection Treatment of Engagements and	
Aspidospermine in Dyspnoca	
Atropine not an Efficient Antidote for Opium 308	
Poisoning 388	1
Aural and Nasal Study of Four Hundred and Fifteen Deaf-	_
Mute Children 54	1

	AGE
Baruch, Simon, Plea for Physiological Remedies	821
Bath Treatment, Is the, of Infectious Diseases in Accord with Modern Ideas t Beech-Creosote, Carbonate of, in Tuberculosis Beef-Meal in Treatment of Insane. Beeflin Letter. Bichloride of Mercury, Action of, on the Blood-Corpuscles. Bichromate of Potassium as an Expectorant. Bladder, Fissures at Neck of Female. Rupture. Tumors. Blair, Edw. S., Ustilago Maidis. Blennorrhesa Neonatorum. Blepharitis.	702 144
Berlin Letter	575
Bichloride of Mercury, Action of, on the Blood-Corpuscies	552
Bichromate of Potassium as an Expectorant	179
Rupture	203
Tumors	₩81
Blair, Edw. S., Ustilago Maidis	291
Blepharitis.	853
treated with Corrosive Sublimate	195
Blepharospasm	199
Boray Effect of Hypodermic Injections of In Acute Pneumonia	317
Boric Acid, Treatment of Boils by	115
Boyce, Rupert, The Nature of Vaccine Immunity	606
Brain, Is there such a Thing as Galvanizing the	825
Brainard, I. N., Physiological Action of Cimicifuga Racemosa	360
Bright's Disease, Treatment of Chronic	191
Broad Ligament, Reciprocal Effects of Pregnancy and Child-	-6-
Birth on Uperation for shortening	287
Physiological Action of	316
Bronchitis, Prescription for	114
Blair, Edw. S., Ustilago Maidis.  Blennorrhœa Neonatorum  Blepharitis.  treated with Corrosive Sublimate.  Blepharospasm.  Blood-Serum Therapy, Present Position of.  Borax, Effect of Hypodermic Injections of, in Acute Pneumonia Boric Acid, Treatment of Boils by.  Boyce, Rupert, The Nature of Vaccine Immunity  Brain, Is there such a Thing as Galvanizing the  Wounds  Brainard, I. N., Physiological Action of Cimicifuga Racemosa Bright's Disease, Treatment of Chronic  Broad Ligament, Reciprocal Effects of Pregnancy and Child- Birth on Operation for shortening  Bromide of Ethyl.  Physiological Action of.  Broonchitis, Prescription for.  Treatment of Acute.  Brown-Séquard's Method, Results obtained from Use of, in Greece  Brucine and Strychnine, Comparative Study of Physiological  Actions of.	379
Brown-Sequert's method, Results obtained from Ose di, in Greece.  Brucine and Strychnine, Comparative Study of Physiological Actions of.  Bubo	110
Brucine and Strychnine, Comparative Study of Physiological	
Actions of	314
Buboes Supportive	700
Bullet, Can a Septic, infect a Gunshot Wound?	63
Casarean Section in Placenta Prævia  Limitations of  Caffeine, Actions of, and of the Product of Distillation of Coffee Calcium Chloride in Pneumonia  Phosphates  Calculus weighing Five Ounces, Removal of  Calculus weighing Five Ounces, Removal of  Influence of, on Flow of Bile  Soap in Syphilis  Treatment of Liver-Diseases  Campbell, W. A., Tin-Poisoning  Camphorated Naphthol, Injections of, in Tubercular Adenitis Cancer.  New Treatment for Inoperable Uterine  of Breast Operation  of Rectum and Sacral Resection—Ovarian Tumor and Ovariotomy  Operation for Removal of Submaxillary	
Cassarean Section in Placenta Praevia	02
Caffeine. Actions of and of the Product of Distillation of Coffee	180
Calcium Chloride in Pneumonia	331
Phosphates	766
Calculus weighing rive Ounces, Removal of	757
Influence of, on Flow of Bile	30
Soap in Syphilis	566
Treatment of Liver-Diseases	387
Camphorated Naphthol, Injections of, in Tubercular Adenitis	701
Cancer	637
New Treatment for Inoperable Uterine	858
of Rectum and Sacral Resection—Ovarian Tumor and	205
Ovariotomy	145
of the Stomach	705
Treatment of Rectal by Excision	130
of the Stomach.  Operation for Removal of Submaxillary  Treatment of Rectal, by Excision  Cantell, J. Abbott, Scabies: Its Symptoms, Diagnosis, and Treatment.  Capsule, Tearing of Opaque and Crumpled Posterior  Carbolic Administration of  Carbon Dioxide in Whooping-Cough  Cardiac Disease  Stimulants, Administration of  Cascarine	564
Cantrell, J. Abbott, Scabies: Its Symptoms, Diagnosis, and	0
Treatment of One one and Crumpled Posterior	458
Carbolic Acid	38
Administration of	406
Carbon Dioxide in Whooping-Cough	701
Stimulants, Administration of	182
Cascarine	Ğ23
Cataract, Abandonment of Iridectomy in Extraction of Hard	553
Cascarine. Cataract, Abandonment of Iridectomy in Extraction of Hard. After-Treatment of, Extraction. due to Ergot-Poisoning	700 341
Extraction of100.	557
Antisepsis inby Semi-Elliptical Section without Iridectomy	738
by Semi-Elliptical Section without Iridectomy	271
without Iridectomy	527
Extraction of Part of Capsule as an Operative Procedure	,
Combined Method	707
insection consequent upon an Operation for	640
_	_

PA	\GB	P.	.GE
Cataract Operations		Dendritic Keratitis, Traumatic	489
Report of	341 484	Dercum, F. X., Treatment of Neurasthenia, with Special Reference to the Rest-Cure.	793
Cataracts, Extraction of, without Iridectomy	52	Dermatol in Ophthalmic Practice	339
Ripening of Immature, by Direct Trituration	710	Detweiler, B. H., Surgical Treatment of Injuries of the Spine Diabetes	258
Cerebral Tumor Operation	279	Mellitus	763
Cerna, David, Therapeutic Uses of Phenocoll, with Special Reference to its Employment in Malaria	811	Pathology and Therapeutics of treated by Pancreatic Juice	843
Cervix, Treatment of Glandular Endometritis of	566	Diabetics, Carbohydrates for	168
Chloralose Actions		Diarrheea in Hot Countries	492 178
Poisoning	839	Prescription  Dietetic Management of Pulmonary Tuberculosis	301
Chlorhydro-Sulphate of Quinine	317	Digitalis,	538
of Methyl, Therapeutic Value of	251	Digitoxine in Heart-Disease	705
Chlorine as an Antidote for Cobra Venom	44	External Treatment of	704
Chloroform Actions.	858	with Papayotin combined with Carbolic Acid	318 8-6
Administration	44	Diphtheritic Angina treated by Chromic Acid	177
Case of Supposed Heart-Failure during Administration of Dangers and Disadvantages of administering in Presence	62	of Conjunctival Sac.	692 847
of a Naked Flame	48	Diuretin, Failure of, to avert Urethral Fever	170
Influence of, on Course of Normal Labor, as studied by the Toko-Dynamometer	202	Dock, George, Salicylates in Treatment of Pleurisy with Effu-	78
Notes on an Accident under	263	Douche of Fine Vapor for the Eyes	340
Study of Influence of, upon the Respiration and Circulation Chlorosis	731	Drugs, Value of  Duboisine in Hystero-Epilepsy	330
Cholera Infection, Question of Immunity and the Value of		Neutral Sulphate of, in Mental Diseases	329
Blood-Serum in preventing	121	Dujardin-Beaumetz, Treatments of	837
Use of Carbonic Acid in	120	Acute, treated by Antiseptic Rectal and Colon Irrigation: Sulphate of Sodium and Intestinal Antisepsis in Treatment	163
ment of	289	of Acute	47
Treatment of Gonorrhœa	154	Dysmenorrhœa—Vulvo-Vaginal Abscess	I
Chromic Acid in Diphtheritic Angina		in Children	360
Citric Acid as a Means of Sterilizing Water during Epidemics of Cholera	.8.	Powders	168
Club-Foot, Early Management of	511	Ear Patients, What Benefit can, derive from Nasal Treatment?	622
Coal-Miners' Nystagmus	56	Eclampsia	565
in Operations on the Eyes	55	Eczema of Lower Extremities  Eel-Skin employed in Blepharoplastic Surgery	224 488
on the Cornea	827	Eklund, Fr., On the Treatment of Hæmoptysis	83
Cocillana, Clinical Note on	576	in Rheumatism, Gout, and Diseases of the Liver and	228
Cold Applications in Continued Fever	258	Kidneys	802
Cold-Water Baths in Hepatic Colic	310	Treatment of Different Ocular Diseases by Electrolysis, Removal of an Extensive Hairy Nævus of the	337
Colgan, James F. E., Open Incision Tenotomy, with Report of a Case in which the Tendon was sutured by the Anderson		Face by	418
Method	670	Embryotomy Empirical Use of Counter-Irritants	
Colodion Iodide in Seborrhæa of Scalp	203	Encephalitis, AcuteEnchondroma of the Scapula	169
Common Diseases, Best Methods to be resorted to in the Treatment of some.	• -	Enteroclysis, Additional Measures to, in Treatment of Summer	
Conjunctiva, Severe Burn of, by Instillation of Calomel while		Diarrhoea of Infantsin Summer Diarrhoea of Children	534
giv ng Potassium Iodide Internally	135	Entropion following Granulations, Rational Operation for	777
Conjunctival Inflammations, Local Treatment of	693	Enuresis in Children	22 I 505
Formulas for		treated by Excito-Motor Medicaments	108
Conjunctivitis, Influence of Naso-Pharyngeal Treatment of	-	Epithelioma	729 716
Vernal	340 197	on Involution of Uterus during Lying-in Period	614
Remarks on	196	Erysipelas, Abortive Treatment of Facial	40
Large Enemas of Oil		Curative Effect of, on Gonorrhoza	
Convergence, Relation of, to Accommodation	132	Eserine in Glaucoma	272
Cool-Bath Treatment of Enteric Fever		Ether as a Menstruum in Medication by the Skin	204
Copaiba in Chronic Cystitis	856	Eucalyptus, Death from Poisoning by	482
nosis of Sinuses, Fistula, Concealed Pus-Cavities, etc	667	Europhen and Europhen-Aristol	50 841
Cornea, Dendritic Ulceration of	413 778	and Antipyrin in Mental Derangements	61B
Corneal Affections, Oil of Tamaquary in	270	Treatment of Chorea by	412
Ulcers, Actual Cautery in	864	Inflammations, Sympathetic	335
Corrosive Sublimate and Tartaric Acid	322	Relation of, to Epilepsy	410
Case of Poisoning by Tartrated Solution of	383	Eyelid Restoration by Means of Skin of a Frog	489
Indications for Subconjunctival Injections of	<b>∡88</b>	tooing	847
Coxalgia	61	Fever, New Method of treating	
Craniectomy, Value of, and the Education of the Idiot Young Creosote, Elimination of	717	Filaria Sanguinis Hominis	
in Gastric Fermentation	759	Fisher, John M., Case of Uterine Myoma. Hysterectomy according to a New Method	252
In Tuberculosis Pulmonum		Electricity in Gynascology	338
Scrofula treated with	162	Fistula, Concealed Pus-Cavities, etc	72I
Treatment of Pulmonary Tuberculosis	308 775	Formalin	389
Croupous Pneumonia Therapeutics	444	Fracture of the Femur, New Method of treating Oblique  Pressure to Seat of, for Purpose of bringing the Bony Frag-	349
Crystals upon Skin following Use of Salophen	102 41	ments into Accurate Apposition and retaining them until	£
Cutaneous Revulsion	121	Consolidation has taken place	603
Cut-Throat treated by Tracheotomy and Immediate Suture Cyanuret of Mercury in Ocular Therapeutics	846	Fractures of the Lower Extremity, Treatment of	783
Cystotomy, Useful Method of Drainage in Suprapubic	854	Healing of Intracapsular	407
Davis, Edward P., Treatment of Incomplete Abortion		Fussell, M. H., Opium and Saline Treatment of Peritonitis	300
Deafness, Prompt Cure of Long-Standing, by Compressed Air-Bath	56	Gallanol in Psoriasis and Eczema	420
Removal of the Stapes for Relief of	782	Gall-Stones, Surgical Treatment of	495

PAGE	PAGI
Sangrenous Hernia, Resection of Intestine and Immediate	Iodoform One of the Best Applications of, in Surgery 71:
Suture in	Toxic Amblyopia from
Gastrostomy and Formation of an Artificial Anus	Wine of, for Inefficient Labor-Pains
Glanders, Recovery from Chronic	Iridectomy, Favorable Action of, in Acute Glaucoma with Loss of Light Perception
Giaucoma 133	Iris, Affections of
Treatment of Hemorrhagic	Iris, Affections of
Gonorrhæa154, 206, 344 in Children	Iritis, Sympathetic Irritation and Sympathetic Serous
in the Male 417	Iron, Absorption and Excretion of
in Women	Preparations in Ansemia and Chlorosis
Some Studies on the Therapeutics of Acute	Treatment of Chlorosis by, and other Drugs 46
treated with Chloride and Iodide of Zinc Injection 354 Gout Treatment	Waters, Investigation on Influence of, on Hæmoglobin 84 Irrigations
Granular Lids 574	Ischio-Pubiotomy
Some Practical Points in Treatment of 347 Guaiacol, Antipyretic Action of 540	London Dichara Malliana Acad mish
Carbonate, Action of 113	Jambul, Diabetes Mellitus steated with
in Bone Tuberculosis	Javal's Ophthalmometer for Correction of Astigmatism 13
in Printings 322 Injections of, in Pulmonary Diseases	Jaw, New Method of Manipulation for Replacement of Dislo- located Lower
Local Use of	located Lower
by Proper Exercise and Feeding	Jequirity, Unusual Effect in Chronic Trachoma
Gussenbauer & Sacrat Operation	Advanced Cancer of Uterus 57
Hæmoptysis	Joint-Tuberculosis, Conservative Treatment of
Hare, H. A., Best Methods to be resorted to in Treatment of	journal, warring to the reaction of our minimum, minimum of
Brief Keview of some of the Recent Practical Advances in	Kataphoresis
Medicine and Therapeutics 361	Kelsey, Charles B., Abscess around the Rectum
Is there such a Thing as Galvanizing the Brain?	How to Operate for Hemorrhoids 2:
Circulation 672	Keratitis and Conical Cornea, Treatment of Certain Types of .  Keratoconus treated with Galvano-Cautery
Value of Salophen as an Antirheumatic	Kerato-Malacia in Young Children
tremities	Kidney, Early Extirpation of Sarcoma of
ple Ulcer of Stomach	Kola and Caffeine, Physiological Actions of 1:
Hearn, Radical Cure of Hydrocele by Incision, Application of	Kolpocystotomy in Relation to Chronic Cystitis in Female 3.
an Irritant, and Drainage	Kramer, S. P., The Nature of Vaccine Immunity
Physiological Treatment of Diseases of 549	Kyle, D. Braden, Phenate or Carbolate of Cocaine as a Local Anæsthetic
Wounds	Sterilized Sponges, with Bacteriological Investigation
Helianthus Annuus and Methylene Blue in Infantile Malarial	T. b A sealoustice of the International Internations of Change
Fever	Labor, Acceleration of, by Intrauterine Injections of Glycerin 24 Antiseptic Intrauterine Injections after
Hemorrhoids 273	Lachrymal Glands, Removal of
Application for	Lachrymotomy, New Process of
New Suggestion as to Surgical Treatment of 634	Lactic Fermentation in Bladder as an Antiseptic Application in Cases of Ammoniacal Complications of the Urine and Treat-
treated by Clamp and Thermo-Cautery	ment of Putrefactive Wounds and Sores 2
Colic, Treatment of	Lancet's Chloroform Commission
Hernia, How should the General Practitioner deal with Strangulated?	Laparotomies, Modern Technique of
Kadicai Cure of	Peritonitis
Herpes of the Cornea treated with Pyoktanin	Larrabee, J. A., Therapeutics of Croupous Pneumonia 4. Laryngo-Tracheitis, Treatment of Acute
Hip-Joint, Bloodless Amputation of, by a New Method 418	Lavage, HCl, and Intragastric Electricity, Measured Effects of, in Chronic Catarrh of Stomach
Homatropine for Correction of Errors of Refraction	Lead in the Urine
Hop-Pickers, Special Form of Ophthalmia to which, are Liable 483	Poisoning from a Bullet in Tibia 3 Lee, J. Frankel, Detection of Lead in Urine 1
Hot Water in Diseases of Infants	Leg, Plastic Operation on Stump after Amputation of
Hydrocele, Radical Cure of	Lepra Tuberosa with Europhen 6
Hydrogen Dioxide as an Aid in the Diagnosis of Sinuses 667 Effect of Sulphuretted, Inhalations upon Cerebration 124	Leuksemia, Therapeutics of
Hydronaphthol in Cholera 192	tised in the Maternity Department of the Hospital of the
Hyoscine, Employment of Chlorhydrate of, in the Insane 110 Hyperchlorhydric Dyspepsia	University of Pennsylvania
Hyperidrosis, Powder for	Liver, Fixing a Displaced 7
Hypnotic Action, Relation between Chemical Composition and 122 Hypodermic Medication	Hydatid Cyst of
Hypopyon Keratitis	So-Called Curare Diabetes, and Asserted Protective Action
mysterectomy according to a New Method in Uterine Myoma 752	of, against this Poison 1 Locomotor Ataxia, Mechanical Treatment of
Ice-Bag as a Therapeutic Agent	Locomotor Ataxia, Mechanical Treatment of
Treatment of Pericarditis by	Lysol in Blennorrhagia 1
in Figures of Breast	McIlvaine, Charles, Deadly and Minor Poisons of Toadstools 2
In Gynaecology	Malayan Fish-Poison, or Aker Tuba, sometimes called Derris
in Gynaecology	Elliptica
Insane, Transfusion of Nerve-Substance in Treatment of 107 Insomnia	Flexure for
of Children, Injection for	Martin, Edward, Some Studies on the Therapeutics of Acute
Instillation Treatment of Genito-Urinary Diseases	Gonorrhea
Corrosive Sublimate	of Muscular Rheumatism in Neuritis
Intestinal Anastomosis by a New Method	Massey, G. Betton, Prevalent Errors in Treatment of Diseases of Women
Obstruction, Use of Saline Cathartics for diagnosticating 50 Intravesical Injections, Some Mistakes in, in the Treatment of	Mastoid Operation, Strongly Counter-Irritant Effects of Usual (
Intubation versus Tracheotomy	Therapeutics
Intussusception successfully treated by Insufflation of Air 243	Medical Confidence, Abuse of
Iodide of Potassium, Absorption of, through Rectum	Medico-Electric Eye-Bath in Scleritis and Episcleritis
10dolorm Emulsion, Sterilization of 60	Membrana Tympani and Ossicles, Class of Cases in which we may expect Good Results from Excision of
in Abdominal Operations	may expect Good Results from Excision of
in Tuberculosis of Joints 178	Menthol in Itching Affections of Skin
Intraocular Absorption of	Use of, in Prurigo

P	AGE	P	AGE
Mercurial Intoxication, Acute, by Hypodermic Injections of	i		628
the Cyanuret of Mercury	341	Pancreas, Effect on Diabetes Mellitus by Feeding on Raw, and Subcutaneous Injection of Liquor Pancreaticus	40B
Potassium	352	Panophthalmitis, Enucleation in	132
Subcutaneous Injections of, in Syphilis		Paracentesis Abdominis, Plea for, in Ascites Paralytic Talipes Valgus, New Operation for	
Metcalfe, G., Use of Pilocarpine in Aural Affections		Parenchymatous Injections in Tonsillitis	424
Methæmoglobinuria induced by Quinine	112	Parker, Rushton, Paper Introductory to the Discussion on the	
Methyl Violet in Diphtheria		Radical Cure of Hernia	
Methylene Blue in Malaria, and Local Application in Diph-	i. I	Hysterectomy in Cases of	569
theriaof Children		Pelvis, Surgical Interference in Cases of Severe Neuralgias Pental as an Anæsthetic	20I
Coloration of Urine of Patients submitted to Influence of	114	Pepsin Prescribing	311
Treatment of Malaria	50	Periorbital Incision in Glaucoma.	773
for Grave Hemorrhages of	59	Permanganate of Potassium as an Emmenagogue and Utero-	
Milk, Boiled		Ovarian Tonicin Gonorrhœal Ophthalmia	39 I
in Bright's Disease	502	Phenate or Carbolate of Cocaine as a Local Ansesthetic	18
Mineral Constituents of Body, Influence of, upon Immunity	- 1	Phenocoll Hydrochlorate in Malaria618,	811
from Infectious Diseases	486	in MalariaPhlyctenular Kerato-Conjunctivitis	470
Miscarriage, Observations on Immediate Treatment of Non-		Phosphate of Sodium, Hypodermic Injections of	546
Preventable	167	mended as Antidotes to	- 8
Montgomery, E. E., Cancer of Rectum and Sacral Resection	145	Photophobia, Simple, treated by Continuous Current	239
Dysmenorrhoea, with its Causes and Treatment—Vulvo- Vaginal Abscess		Phthisis, Gastric Disorders of	III
Treatment of Abortion followed by Sepsis	516	Pilocarpine in Aural Affections	603
Morphine Abstinence, Stomach Symptoms due to	756	in Diphtheria	540
and Atropine, Action of, upon the Circulation	3×7	Piperazin in Stone in Kidney	19
Poisoning successfully treated by Atropine	308	Plastic Operation for Cure of Deformity of Penis resulting from Gangrene	424
Müller, R. E., Enteroclysis in Summer Diarrhoea of Children,	-39	Plea for Physiological Remedies	821
with Report of Seventy-eight Cases, together with the Results of Laboratory Investigations		Pleurisy, Non-Purulent Exudative, treated by Salicylic Acid or Salicylate of Sodium	
Mydriatic, Should it be used, as a Kule, in Kelractive Cases?	7º9	Pleuritic Effusions Rarly Removal of	113
Mydriatics in Ophthalmology	130	Plumbism, Occurrence of, among Safety Electric-Lamp Workers Pneumonia	288
Myopia, Therapeutics of		Hypodermic Injections of Serum in	533
Myxcedema	207	treated with Large Doses of Digitalis	
Three Successful Cases oftreated by Ingestion of Fresh Thyroid Glands	490 251	Treatment of Acute	197
by the Administration of the Thyroid Gland of the	1	Pregnant Women, Preparing for Labor	819
Lower Animals,	307	Prentiss, D. W., Pilocarpine: Its Physiological Action and Therapeutic Uses, with Exhibition of Specimen showing	
Naphtholate of Bismuth	697	Therapeutic Uses, with Exhibition of Specimen showing Change in Color of Hair	654
Nasal Duct, Radical Cure of Stricture of	485	Prism Prescribing	857
Nephritis of Pregnancy	561	Gland, New Operation for Relief of Enlargement of	760
Nerium Oleander as a Cardiac Tonic	400	Proteine in Actinomycosis  Pterygium and Operation for Cataract	272
Nervous Disorders, Application of Rapid and Continuous Vi-	950	Operation for	336
brations in	107	Ptosis and its Surgical Treatment Puerperal Sepsis	196 416
of First Rib, and subsequently Application of Cocaine	276	Puff-Ball, Hæmostatic Properties of	633
New Drugs	793	Pulmonary Elimination of Certain Medicinal Substances  Emboli following Mercurial Injections	°37
Nitrites and Nitrates, Pharmacology of	771	Tuberculosis, Treatment of, by Inhalations of Iodoformated	
Nitro-Glycerin in Arterio-Sclerosis	736	or Iodolated Easence of Turpentine Purgatives, Effect on Sucklings of, administered to the Mother	407
Unusual acquired Tolerance	202	Pysemic Thrombosis of Lateral Sinus	280
Nitro-Hydrochloric Acid Bath in Chronic Liver Cases Non-Perforating Peritoneal and Intestinal Lesions and their	542	Pyosalpingitis, Simple Method of Evacuation applicable; to, and Collections of Fluid in Cavity of Pelvis	157
Treatment	491	•	
North Carolina, Climate of	688	Quenue's Operation for Hemorrhoids	564
Objective assessed has Died		Quicksilver Vapor from Mercurial Ointment	37
Obsettrical Cases, Rules for the Nursing of, in University of	- 6	Quinine, Atropine, Pilocarpine, Antipyrin, and Antifebrin on Elimination of Uric Acid by the Urine and on the Num-	٠.۵.
Pennsylvania, Maternity Department	668	Blindness	
Ocular Antiseptic, Value of Formic Aldehyde as an	770	Blindness	775
Operations performed in the Ophthalmic Service of the Venetian Hospital	273	Instillations of Sulphate of, in Ulcerated Keratitis	62°
O'Dwyer's Method of Intubation	779		_
O'Dwyer's Method of Intubation Edema, Tuberculous Joints treated by Induction of Local	640	Reading, George Evans, Case of Unusual Acquired Tolerance	
Esophageal Strictures, New Method of cutting	<b>27</b> 3	to Nitro-Glycerin	38
of Œsophagus	139	Redmond, C. Stennett, Cool-Bath Treatment of Enteric Fever	595
Oleic Creosote	533	Resection of Cocum, Greater Part of Ascending Colon, and Five Inches of Ileum for Malignant Disease of Ascending	
Operations, Statistics of, with Remarks	629	Resorcia	243
Ophthalmia Neonatorum, Prophylactic Treatment of Ophthalmic Practice, Some Results of a Bacteriological Exam-	134	Respiration and Circulation	672
ination of Pipettes and Collyria taken from a Treatment		Rest-Treatment, On Conduct of	460
Case used inSolutions, Sterilization of	502 482	Retins, Detachment of	411
Opium-Poisoning in Opium-Smokers	539	Reviews63, 140, 200, 283, 358, 425, 500, 571, 642, 718, 788, Rheumatism, Mechanical Treatment of Acute	858
Optic Nerve, Gray Atrophy of	300   624		423
Optic Nerve, Gray Atrophy of	,	Pockwell A D Therapeutics of Electricity in Rheumatism.	
Action of Iodoform in Case of Burn	625	Gout, and Diseases of the Liver and Kidneys	-J-10
Orbit, Treatment of Hydatid Cysts of	537	Consideration of the Kelative Values of High and Me-	680
Organic Liquids extracted from Glands and other Organs Value of Injection of, in Therapeutics326,	472	dium Altitudes in Treatment of Pulmonary Tuberculosis Contribution to Treatment of Pulmonary Tuberculosis with	
Osteoplastic Closure of Defects of Skull	493	Professor Koch's Tuberculin	369
Ovariotomy in Infants	566	Salienlates in Plaurier	•R
Ozena, Therapeutics of Caspiratory Tract	334	Salicylates in Pleurisy	300
		Salines in Peritonitis Salol, Subcutaneous Injections of, in Tuberculosis.  Transment of Diabetes Mellitus with	755
Palate, Original Method of restoring Alveolar Arch in Anterior		Treatment of Dishetes Mellitus with	382

PA	GE		AGE
	38	Syphilis, Treatment of	828
	88	Treatment of Constitutional, by External Methods of Ad-	
Salt Water, Subcutaneous and Intravenous Injections of	97	ministration of Mercury	499
Scarlet Fever, Prophylactic Treatment of	246		
Schweinitz, E. A. de, Some Results of a Bacteriological Exam-	-	Tone Warm New Combinations aminu	
ination of the Pipettes and Collyria taken from a Treatment		Tape-Worm, New Combinations against	~~=
Case used in Ophthalmic Practice, with the Effects of Inoculations	-8-	On Conduct of Rest Treatment	460
Schweinitz, G. E. de, Antisepsis in Cataract Extraction	728	Tenotomy, Open Incision	670
Conjunctival Injections of Corrosive Sublimate	374	Simple Method of operating for Partial, of Recti Muscles	268
Detachment of Retina and Four Illustrative Cases	ii	Testicular Juice, Physiological and Therapeutic Action of	III
Some Results of a Bacteriological Examination of the		Tetanus	037
Pipettes and Collyria taken from a Treatment Case used in Ophthalmic Practice, with the Effects of Inoculations	-0.	Traumatic, cured by Amputation	252
Sciatica, Treatment of	405	treated by Immunised Blood-Serum	241
Scientis, Iritis, and Diffuse Keratitis	55	Treatment by Amputation	695
Scopolamine, Action of, on the Eye	78x	Theobromine, Caffeine, and a few Substances belonging to this Group, Influence on Arterial Blood-Pressure of	
Scopolamium Hydrochloricum: A New Mydriatic	338	Diuretic Action of	37
Scrotum, Hemorrhagic Infarction of	133 I	Treatment of Cardiac Dropsies by	767
Seiss, Ralph W., Treatment of Acute Laryngo-Tracheitis		Therapeutics, Brief Review of some of the Recent Advances in	
Senna, Clinical Experiences with the Cathartic Acid of	763	Medicine and	361
Serotherapy in Small-Pox	765	of Pneumonia in Children	392
Serum Therapeutics of Cholera	708	Thomas, Charles Hermon, Lachrymal Obstruction and its	yu
Skin, Curved, Incisions		Treatment	€08
Skin Disturbances due to Deficiency of Fat	253	Thornton, E. Q., Case of Poisoning by Tartrated Solution of	
Grafting of Entire Cavity of Orbit	56	Corrosive Sublimate	368
Grafts and Mucous Membrane in Diseases of Eyelashes		Antidotes to Phosphorus	8
use of Thiersch's, as a Substitute for Conjunctiva	707	Study of the Influence of Chloroform upon the Respiration	•
Ointment for Chapped	172	and Circulation	672
Spots of Pregnancy, Ointment for	172	Throat Douches	766
Transplantation, Modification of Thiersch's Method	416	Thymol as an Anthelmintic	325
of Large Flaps of	570	Thyroid Extract, Treatment of Cretinism with Injections of	381
Good Results from Excision of	448	Feeding, Treatment of Myxcedema	760
Soap, Value of Ethereal Antiseptic, in cleansing Wounds	432	Gland desiccated in Myxœdema	288
Sodium, Ethylate of, as a Dermal Agent	110	Fatal Case of Myxœdema which had been treated by Use of	
Solly, S. Edwin, Report upon Cases of Tubercular Laryngitis treated in Colorado Springs	l	Myxœdema treated with Internal Administration of	474
Soya Beans for Diabetes	754 622	Tin-Polsoning	152
Spina Bifida	276	Toadstools, Deadly and Minor Poisons of	206
Spinal Canal, Puncture of, according to Method of Ouincke	638	Tobacco Amblyopia	853
Spine, Surgery of Treatment of Surgical Injuries of	415	Tolypyrin	403
Spines, Treatment of Sensitive	600	Tonsils, Parenchymatous Injections in Acute Inflammatory	343
Splenectomy	785	Affections of	бто
Sponges, Sterilized, with Bacteriological Investigation	82	Trachoma	268
Spray in Diseases of Stomach	173	Danger of Infection while operating for	195
Stacke's Operation of Opening Attic and Antrum from the	-0-	Surgical Treatment of	240
Meatus	702	Transplantation of Tubercle of the Tibia, Elongation of Liga-	
Magnet	198	mentum Patelise treated by	348
Stelwagon, Henry W., Acne, Acne Rosacea, Seborrhoza, and	٠. ا	Tubercular Iritis and its Treatment	305
Sycosis		Laryngitis treated in Colorado Springs  Tuberculosis, Contribution to Treatment of Pulmonary	754
Antiseptic Varnish.	626	in Children	766
Sterilization of Solutions of Atropine, Eserine, and Cocaine, and	-33	of Joints, Modern Treatment of	60
Description of New Pipette	56	of Peritoneum, Curative Effect of Laparotomy in	570
Stewart, D. D., Considerations of some Therapeutic Agents in	.	of Prostate	042
Treatment of Diseases of Stomach	87	sipelas	421
which especially are Lavage, HCl, and Intravastric Elec-		Treatment of Surgical, of the Extremities by Passive	-
which especially are Lavage, HCl, and Intragastric Elec- tricity, upon Secretory and Motor Functions of Stomach	ı	Hyperemia	385
in Cases of Chronic Catarrh	744	Tumors of the Bladder, Temporary Resection of Symphysis as an Aid to the Extirpation of	
Piperazin in Treatment of Stone in Kidney Tolerance to Nitro-Glycerin easily acquired. Limitations	19	Tympanic Vertigo, Operative Treatment of	782
of Use of Drug in Chronic Nephritis	604 I	Typhoid Fever	303
Stewart, F. E., Some Points in Treatment of Uric-Acid Dia-	- 1	Forced Alimentation in	46
thesis	818	Intestinal Antisepsis in	115 
Stomach, Consideration of some Modern Therapeutic Agents in Treatment of Diseases of	87	treated by Bathing	262
Nitrate of Silver in Diseases of	830	treatment of, by Baths and Intestinal Antisepsis	40
Round Ulcer of	613	with Dead Cultures of the Bacillus Pyocyaneus	<b>7</b> 62
Convergens, Conservative Treatment of	026	Tyson, James, Treatment of Chronic Valvular Disease of the	
Stricture of Urethra in Women	330	Treatment of Gout	721
Strontium, Actions and Uses of Iodide of	169		
Strychnine during Pregnancy as an Aid to Labor	33x		
in Snake-Bite Poisoning by Sulphate of	549	Ulcer of Stomach	588
Death ensuing unusually long after Onset of Symptoms	29	Ulcers of Cornea	196
Sublimate, Central Chorolditis treated by Subconjunctival In-	7/3	Umbilical Cord, Best Dressing of	50 <del>2</del>
jections of	473	ments in Compound and	282
Injections in Purulent Arthritis	353	Ureter, Implantation of, into the Rectum	200
Solution, WarmSubconjunctival Injections of	848	Urethra, Complete Rupture of	492
Subcutaneous Use of, in Syphilis	282	Stricture of, treated by Electricity	239
Sulphonal, Action	216	Gravel and Gout	126
Suppositories Presention of Glycoria	41	Urinary Infection, Permanent Catheterization in	562
Suppositories, Preparation of Glycerin	-70	Passages, Antiseptics in Treatment of Surgical Diseases	
Suprapubic Cystomy in which Bladder was distended with Air instead of Water, and Four Hundred and Ninety-five Cal-	l	Urine in Relation to Ansethesia	491
cull removed	787	Urticaria, Evanescent, cured by the Constant Current	716
Patients.		Ointment in Children	258
Symphlepharon by New Operation	53	Ustilago Maidis	201
Symphyseotomy204. 6	536	Uterine Appendages, Operation upon, with a View to pre- serving the Functions of Menstruction and Ovulation	404
Symphyseotomy	569	Fibromata, Electrical Treatment of	560
Syphilis, Combined Indides in	E2	Treatment with Chloride of Zinc	- 68
Hypodermic Method in	490	Uterus, Anterior Abdominal Hysteropexy for Prolapse of	565
Preventive Treatment of	507	Extraperitoneal Hysteropexy for Deviations of On Treatment of some Forms of advanced Cancer of	505
treated by Hypodermic Injections	716	Sacral Method of extirpating	3/7 402

PAGE	PA	G
Vaccine Immunity, The Nature of	Vulva, Eczema of	17 60
vix for Cancer of Uterus	Welander's Abortive Treatment of Buboes	
Üteri 138	Method of aborting Bubo	34
Ligation of Portion of Broad Ligament for Uterine Tumor or Hemorrhage	Whittaker, J. T., Creosote in Tuberculosis Pulmonum Wilcox, Reynold W., Treatment of Asute Bronchitis	43
Vaginodynia 357	Willard, De Forest, Early Managemont of Club-Foot,	51
Varicose Veins	Women, Painful Micturition in	16. 37
Vaso-Motor Dilators in Cardiac Fallure	Wounds, Antiseptic Management of	
Heart 728		_
Voltaic Alternatives in Eye-Affections	Yellow Fever	83
Vomiting, Bromide of Strontium in 115	Zinc Sulphate as an Antiseptic in Typhoid and Cholera	IO

. . • -

